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For the Southern Agriculturist.

EXAMINATION OF MR. EDMUND RHETT'S AGRICULTURAL ADDRESS—BY WM. ELLIOTT, ESQ.

[Concluded from page 120.]

I willingly pass by many passages of Mr. Rhett's Address that call for comment, to reply to his remarks on the subject of domestic trade (page 711.) They grow out of the fallacies already combated. In the extracts already given, I have classed the merchant—meaning the foreign, among the producers. Now Mr. Rhett asserts that the profits of the merchant engaged in the domestic trade add in the same degree to the wealth of the State as those from foreign trade. This I deny, for the difference between the value of the article exported and the imported article for which it is exchanged —in other words, the profits of the merchant engaged in foreign trade—are so much *added* to the wealth of the State. It is value introduced, which had no place there before the exchange. But, in the domestic trade, the profit is drawn from the bosom of the State itself; the money which measures and expresses it, existed already, in the hands of other citizens, and is merely transferred from one to another. Individuals may be enriched by the domestic trade—but the community, as such, remains in statu quo, no money from abroad, no commodity from abroad is introduced, and it is difficult to understand how a community can be richer without increment in its commodities, or in the money which represent them—in other words, without increased production. We shall explain our meaning by a very simple illustration. We will suppose the value of a barrel of flour at the mill to be six dollars. A. buys it and transports it by the carrier, B. to a market town, where it is sold to C. for eight dollars, paying one dollar to B. for transportation, and making one dollar profit for himself. Now the eight dollars paid by C. has given employment, and yielded a profit to A. and B., but has any new wealth been added to the community? Certainly not. The sum paid by C. pre-existed in the community, and had he resided near the mill, he would have paid but six dollars for the flour, and retained what has gone to A. and B. as profits, in his own pocket. The aggregate wealth of the State is the same as if no exchanges had taken place. But suppose a foreigner had stept in and paid

the eight dollars: in that case the one dollar profit made by A. would have been wealth introduced, not pre-existent—and production, in every sense of the word.

Yet a domestic trade is not to be slightly esteemed. Employment may be abundant, and profits remunerating, and a people prosperous—while production is merely stationary; though our own country has happily given, so far, no illustration of the remark, the continued increase of production giving full activity to domestic exchanges.

What we have said in regard to the profits of the domestic merchant, applies with equal force in the case of the physician, "his dwelling-house, which he has purchased with the profits of his practice, is not less his," says Mr. Rhett, "than the ware-house of the merchant."—Granted—he has earned it, honestly earned it by labor of body and mind; no one denies it, but whence came it? "Out of his profits,"—and whence came they? From those who employed and paid him; from those who produced, or received from others who produced; and you cannot shew any new material value added to the common stock. The only difference is this, the sums which before were lodged in others pockets, have been transferred to his own, so that he has more of the aggregate, and others less. And so far from the erection of this house proving the fact of increased production, it might even prove the reverse. For if the farmer, mechanic or merchant, was cramped in his business, by the sums transferred to the physician, with which he built his house, their products would diminish, and the sum of material wealth be lessened instead of increased. Nor do the profits of the lawyer (for I must trench on this delicate ground,) when derived from his ordinary business, stand on any different foundation. Whether they come from drawing deeds and settlements, or for pleading at the bar, in every case they take the shape of fees—and are drawn from the bosom of the community, and from the fund of pre-existent wealth. In extraordinary cases, he may be a producer, but it is the exception, not the rule. One of these cases was given in the "extract" from my address already quoted—another is cited by Mr. Rhett, in which the lawyer is clearly a producer; but it must be noticed that even here—as law-suits have *two sides* to them, had the producing lawyer been over-matched in professional skill, by his non-producing antagonist, the verdict might have gone the other way, and as much wealth been lost to the country by his failure, as was gained or saved by his success.

And now we come to a close examination of the use made by the gentleman himself, that of the lawyer of St. Helena Parish—"A tract of land has been lying waste on account of some confusion in the titles." "The lawyer by his skill relieves it of its uncertainties,

and an English capitalist buys it, and the land which formerly produced nothing, now yields a profit of ten per cent to the proprietor." Here is a positive addition to the wealth of the parish, and the lawyer turns out to be a producer in the very same sense the merchant is a producer, that is he has increased the wealth of the parish by adding to it a value indicated,—1st, by the gold and silver brought hither to be given in exchange for the land; and 2nd, by *the annual addition of ten per cent to the revenue of the community!* Here again Mr. Rhett is decidedly in error; *the proprietor* I think it is, who receives the ten per cent profit? For what? For the agricultural labor he has expended, and the new product he has reared by his skill. He it is, who made the product and the profit, and if *he* did, the lawyer did not. No! So far as "the ten per cent" is in question, the lawyer is incidentally a producer, by enabling the proprietor to produce—and the proprietor is directly the producer or he could have no title to the ten per cent. In so far as "the gold and silver" is concerned, the lawyer is directly a producer, *as the case is put!* But reverse the condition of things, let it be "the English capitalist" who owns the land, relieved from waste by the skill of the lawyer, and a citizen who buys them, this very gold and silver, which now comes in to enrich the community, will go abroad to its impoverishment. A lawyer then, is not a producer, in the ordinary course of his business—his profits are not productions! And in extraordinary cases, the chances are equal, that he works a withdrawal of as much gold and silver from the country, as he helps to introduce.

But I have sufficiently trespassed on the patience of your readers, and must reserve for a future number, the sequel of my strictures on Mr. Rhett's Address.

I am, respectfully, Mr. Editor,

Your obedient servant,

WILLIAM ELLIOTT.

For the Southern Agriculturist.

EXPERIMENT ON THE PROPER DISTANCES FOR COTTON.

Mr. Editor:—When I had the pleasure of seeing you at my house last spring, you requested me to make an experiment on thinning Cotton to different distances, with the view of ascertaining if possible, what is the best distance to give between the hills. I made the experiment accordingly, and hand you an account of it.

The rows were three feet apart, and five hundred and eighty-five yards long.

1st	row	thinned	to	6	inches,	produced	100	lbs.	Seed	Cotton.
2d	"	"	to	8	"	"	90	"	"	"
3d	"	"	to	10	"	"	106	"	"	"
4th	"	"	to	12	"	"	82	"	"	"
5th	"	"	to	14	"	"	92	"	"	"
6th	"	"	to	16	"	"	100	"	"	"
7th	"	"	to	18	"	"	107	"	"	"
8th	"	"	to	20	"	"	105	"	"	"
9th	"	"	to	22	"	"	118	"	"	"
10th	"	"	to	24	"	"	91	"	"	"
11th	"	"	to	7	"	"	122	"	"	"

The difference in the product of the different rows, I suspect, is owing to the manure not having been equally distributed, for it is difficult to get precisely the same quantity put under each bed. If any thing is proven by this experiment, it is, that between six inches and twenty-four, there is but little difference in the product; but the same experiment must be repeated for several years before the question, whether one distance is better than another, can be settled. Last year was very wet, and the weeds grew unusually large; this may account for the rows having the greatest distance producing as much as the others; but in a dry year the result might be very different. To make a satisfactory experiment, I would suggest that it be made upon Cotton to which no manure is applied, on account of the difficulty of spreading the manure equally on the different rows.

Yours, respectfully,

J. A. GILLESPIE.

Marlboro' So. Ca.

P. S.—The land on which this experiment was made, is upland, sometimes called oak and hickory land.

ON A PRINCIPLE OF FENCING,

FORMED ACCORDING TO THE LAWS OF VEGETABLE PHYSIOLOGY.

AT a recent meeting of the Botanical Society of London, the following account was given by Mr. Daniel Cooper, the curator, of the mode of forming a fence-work to plantations, &c., of a very economical and rustic kind, and which may be termed with all propriety, a "*Natural living Fence.*" We are induced to give a full abstract of the communication, (from the first part of the Society's proceedings,) as we think the suggestion might offer some points of interest to our country readers.

The natural living fence consists simply of planting for the purpose trees or shoots of the same species, or species of the same genus, or genera of the same natural family, and causing them to unite by means of the process of "*grafting by approach or inarching*," a process well understood by gardeners and horticulturists. The fact having been briefly stated, it is necessary, in the next place, to enter more fully into an explanation of the plan to be adopted. In the first instance it is requisite to cultivate a portion of the land for the purpose of rearing the shoots intended for forming the fence. Those which I had an opportunity of observing (on the estate of Sir Thomas Neaves, Dagnam Park, Essex, constructed by his gardener and planter Mr. Breese,) were formed of ash, but of course any other tree would similarly unite and answer the end required. The faster the tree grows, and produces new wood, the stronger and better the fence necessarily becomes. The shoots or small trees are run up (as termed by gardeners,) and kept trimmed so as to produce stems as straight as possible. These are trained to the heights required, depending upon the intended height of the fence. As soon as they have acquired sufficient age they are carefully transplanted, a trench of two feet in width being previously made in the line of the intended fence, it being found necessary to surround the roots with earth of a richer nature than that usually met with, where fences are to be placed, such as the outskirts of woods, plantations, parks, &c. The trench having been made and prepared, the stems are then carefully removed; one set being planted at the required distance, a foot for instance from each other, those we may suppose to slope to the north; the other set, for example, are planted sloping towards the south, at the same distance from each other, so that when the shoots proceed from the ground, they are in contact with their internal part.

The several stems having been thus arranged, the next and most important step is that of causing them to unite; this of course is requisite in order to produce strength, and is accomplished by the process of *grafting by approach*, or, what is the same thing, that of *inarching*. For this purpose it is necessary to remove a small plate of bark at the proper season, on each stem where their inner portions are in contact; this having been carefully performed, approximate the two stems, so that the denuded portions of each shall exactly meet; tie the stems together at these places, and keep them for a short time from the action of the atmosphere by means of a piece of clay. In the course of a few weeks, if these precautions have been attended to, adhesion takes place, and the result is, that a natural living fence has been formed, having openings of a diamond shape, which may be made of course of any size that may be required; it being only requisite to place the stems in the earth at a greater or less distance from each other.

The adhesion takes place in the following manner according to the laws of vegetable physiology. The plates of bark being removed on each stem, and the stems approximated to each other at that part, it follows that as the fluids rise in the stems of exogenous (out-growing) trees, within the woody portion of the trunk and descend within the bark,—that the stems being closely tied to each other, and kept at their point of union from the action of the air, the *cambium* (proper or elaborate juice) exudes, forms new wood, and the stems unite by the natural process.

The advantages which Mr. Cooper considers this kind of fencing to possess over that of ordinary use, are the following:—

1st. That it is rustic, and has not the hard and stiff appearance of the fencing made by carpenters.

2d. That so long as the trees of which it is formed are alive, it never requires to be in any way repaired, as living wood resists the action of the weather. The young shoots, should any spring forth, are to be removed by the pruning knife.

3d. That it may be carried to any height without additional expense, by training or running up the stems to the required height.

4th. That it acquires strength and thickens by a deposition of new wood annually; so that in the course of years, when the stems have acquired the greatest degree of thickness, and have obliterated the openings, in the first instance made, a complete solid living wall will be the result.

5th. That owing to the well known durability and power of resisting the action of the weather of the bark, and external portions of living trees, a fence made on this plan does not require to be covered with tar, or any other preparations, requiring much time, labor, expense and annoyance in the operation.

6th. That the first expense is the last, and is much cheaper also, in the first instance, to the ordinary kind of fencing, employed, not requiring an annual expenditure to keep it in order; living wood, as before observed, withstanding the effects of the weather to a much greater extent than dead wood.

6th. That a fence to orchards may be formed of fruit trees of the same genus, or in the same natural family; the lower portions or stems of which form the fence, (and may be carried, as before observed, to the requisite height,) whilst the upper part may be allowed to send forth its shoots and bear fruit.

8th. That owing to the open nature of this kind of fence (which openings may be formed of any size,) shrubs and other plants usually planted close up to fence work, for the purpose of concealing it, will receive a larger portion of air and light, so necessary to the growth of vegetables, which cannot be the case with the ordinary method of enclosing parks, &c., with palings.

9th. That should any of the bars by any cause become dead or destroyed, the circulation is carried on by the continuous bar or stem; so that if a bar dies it still remains in its situation, although it does not increase in thickness as takes place in those round it; this dead bar may then be compared as to durability, to the fencing until the present time formed of dead wood.

From the well-known nature and structure of wood, I consider the application of the process of *grafting by approach*, or *inarching*, in the construction of fences of all descriptions, to be one of the leading improvements of late years, made in the science of gardening; and as such should recommend its adoption to those individuals possessing landed property, and also the directors of rail-roads and other undertakings, where both man and cattle are intended to be kept off, and which might more effectually be accomplished by the judicious selection of stems armed with prickles, &c.—*Farmer's Magazine.*

ORCHARD GRASS.—Dactylis Glomerata.

In England, where this grass is extensively cultivated, it is called "Round-headed Cock's-foot grass." It was introduced from Virginia into Britain, about the year 1780, though it was little known or cultivated for many years after. This grass has been cultivated in small quantities in different parts of the United States; but from the many inquiries relative to its habits and worth, we conclude there is but little known of it in this country. Professor Low says, "it is justly held to be amongst the superior pasture grasses, and is suited for forage as well as herbage. It is more nourishing in spring than in autumn, and requires to be closely cropped; for, when suffered to grow, it rises in tufts and patches, and loses greatly of its nutritive particles. Oxen, horses and sheep eat this grass eagerly. Cocksfoot should always be sown in combination with other grasses, as the rye grass, the meadow fescue *(festuca pratensia,)* and other finer grasses."

George Sinclair, gardener to his grace the Duke of Bedford, ascertained from accurate chemical experiments, that the proportional value which this grass, at the time of flowering, bears to that at the time the seed is ripe, is as five to seven, nearly. The proportional value which the grass of the latter moth bears to that at the time of flowering, is as six to ten; and to that at the time the seed is ripe, as six to fourteen: 64 dr. of the straws at the time of flowering afford of nutritive matter 1.2 dr. The leaves or latter moth and the straws simply, are therefore of equal proportional value; a circumstance which will point at this grass to be more valuable for permanent pasture than for hay. The above details prove that the loss of

nearly one third the value of the crop is sustained if it is left till the period when the seed is ripe, though the proportional value of the grass at that time is greater, i. e. as seven to five. The product does not increase if the grass is left growing after the period of flowering, but uniformly decreases; and the loss of the latter moth, which (from the rapid growth of the foliage after the grass is cropped) is very considerable. These circumstances point out the necessity of keeping this grass closely cropped, either with the scythe or cattle, to reap the full benefit of its great merits.

Mr. Zechariah Cone, in the October number of the New Genesee Farmer, says—"As to the soil adapted to the growth of Orchard grass, I conceive that moist rich loam is the best, but I have found that when I have sown it among other grasses for pasture, it grows luxuriantly, and in cases of severe drought, when all other grasses are apparently dead, this stands the best, being all the time green and fresh. The best time for sowing the seed I conceive to be about the middle of July or first of August, as probably nature directs this the best time for sowing when the seeds come to maturity, which is about that time or earlier—to be dragged in on mellow land, yet I always stock in the spring with oats, at the rate of a bushel to the acre, and if the oats are not too heavy it generally grows well. Its value for hay, I think, stands as high as any other grass, and for feed and the second crop it stands pre-eminent, as it comes forward earlier in the spring and holds out longer in the fall. I usually cut from two and a half to three tons per acre, exclusive of the seed, which I reap before mowing in the same manner as I would wheat, and generally secure from fifteen to twenty bushels to the acre. The second crop generally yields from one and a half to two tons per acre."

The writer last March sowed about a half acre of orchard grass in the corner of a lot sown down in timothy and herd's grass, that has been pastured with calves and sheep since July, but it has continued fresh and thriving all the time. There is no doubt it would be one of our most valuable grasses, did our farmers understand well its cultivation, and the manner of consuming it to the best advantage. From our experience and the information from others, we feel entirely safe in giving the following rules:—

1st. Strong and loose ground is best for it, but it will bear shading and grow on land that will produce any other kind of cultivated grass. Let the ground be broken well, then harrowed, the seed sown, two bushels to the acre when alone, or one bushel with other grasses, then brush it lightly, roll it, and let it alone. If the season is favorable the set will be good.

2d. Mr. Cone directs that the seed be sown in July or August, which is perhaps the natural and best time to sow all kinds of grass; but no one will doubt but February and March are good months for

sowing. If the ground is properly prepared, the season favorable, there is perfect safety in sowing in the spring. A good stand of grass might have been secured, by sowing at any time from the first of last February till the last of September, of the present year, but such a season we may not soon see again. This grass does well with clover, herd's grass and timothy.

3d. To get the full benefit of Orchard grass, it must be kept in mind that it has to be cut often or pastured closely to prevent it from growing in tufts and bunches.

It affords most nutritive matter also when not suffered to get entirely ripe. The hay if cut at the right time is sweet, and stock are remarkably fond of it.—*Nashville (Ten.) Agriculturist.*

CULTIVATION OF THE ARTICHOKE, &c.

Dardenne P. O., St. Charles Co., (Mo.,) Nov. 19, 1840.

To the Editor of the American Farmer :—In a late number of the Farmer you published a request from a subscriber for information as to the proper mode of cultivating the artichoke; and if it will not be deemed arrogant for a man who has cultivated but a single crop, to offer advice to others, I will give you the result of some experiments which I made in the cultivation of that plant the present season.

Whether the artichoke we cultivate here, is the genuine Jerusalem artichoke or not, I am not prepared to determine, as I have seen no other kind, nor even a specific description of the different varieties of that plant. This plant has been cultivated in this neighborhood by a few individuals for several years, and highly recommended to others by all who had tried it.

Last spring a particular friend of mine who had cultivated the artichoke to some extent, presented me with a single artichoke, a very large one, accompanied with a request that I would make it produce as much as possible, and make public report of my doings in the premises, to which conditions I assented. I commenced operations by dividing it into forty-five parts, taking care to leave at least one eye to each part. These I planted in fifteen hills, in two rows, hills four feet apart each way, in a highly manured piece of land in my garden. My object in planting in two rows only, instead of a solid square form, was that the plants might all enjoy the full benefit of sun and air, at least on one side. They were well cultivated, that is, the ground was kept clean, and well pulverised. On the 22d of October, this crop was dug in order to be sent to the annual exhibition of the St. Charles Agricultural Society, for exhibition and measurement. I was prevented from attending the Fair by a severe bodily affliction, and sent the artichokes and divers

other articles, by my son, a youth of seventeen, with a verbal request to the officers of the Society to have them measured and officially reported. This the Society failed to do, and the crop was not measured. They however filled two of the sacks that ground alumn salt is brought to market in, as full as they would tie, and a third one about half full. These sacks hold from three to three and a half bushels each; and therefore the product must have been from seven and a half to eight bushels, which is believed to be the greatest yield that is on record.

Now for my general crop: I procured about three fourths of a bushel of seed artichokes last spring from the same friend who presented the large one above mentioned. I planted them on a lot that I considered too much reduced by cultivation to make a fair crop; but as it was the only small lot I had on which I could afford to turn my hogs to harvest the crop, I determined to plant them on it, and adopted the following plan to make it productive. The ground was well broken up in the fore part of May, and laid off with the shovel-plough at four feet distance each way; the very small pieces dropped in a hill, and covered about as corn is generally covered. When the plants were of sufficient size, they were ploughed and hoed in the usual way; and when waist high or a little more, were ploughed both ways with the shovel-plough, very deep, say nine or ten inches; and as soon after as it could be done, the whole surface, (one-fifth excepted, for experiment) of the patch was covered to the depth of about three inches, with old half-rotten straw. Yesterday I dug four successional hills near the middle of the patch, where the straw was laid, and found the product to be one and three-quarter bushels by actual measurement. I also in like manner dug four hills where no straw had been put on, and found the product to be seven-eighths of a bushel, or exactly half as much as the other.

I had been impressed with the belief for several years past, that all cultivated crops might be greatly increased by applying some covering to the surface after the ground had been effectually cleaned and pulverised; and made this experiment to test the correctness of that belief. The result has been a most triumphant demonstration of the correctness of that belief. According to the rate of production of the four hills dug where the straw was laid on, the product per acre would be one thousand one hundred and ninety-six bushels and a fraction. This I think would be hard to beat, too. * * * * * * * * * * *

Yours, respectfully,

JOHN SMITH.

SWEET POTATOES.

Neville Farm, Clermont Co., O.

I was for many years in the habit of raising high, peaked hills for my potatoes, and then flattening the tops, say six or eight inches in diameter—and then planting from three to five pieces, or small roots in each hill. The result was universally, if it was seasonable, I had an overflowing crop of *vines* but few *roots*, and these small. If the season was dry, I had but few *vines* and *no roots*. Last spring I determined to try again. Accordingly I bought some seed potatoes in market in Cincinnati, of an old gentleman, I think his name was Durham, and he directed me how to manage—which was as follows: Plough your ground *deep*, then harrow it well, so as to pulverise it; then furrow it off three feet apart, and then cross-furrow it three feet six inches. These furrows form the margin of each hill; then pulverise all the clods in each hill, and raise them up, say about ten inches, leaving them perfectly flat on the top. Put in *one small potato*, or a piece not larger than your least finger, in the middle of each hill; (and, said he, Durham, you will have roots with but few tops,) I followed his directions, and the result was, I had more in a hill, and I think larger potatoes than I had ever seen before. Some of your readers will see this article who saw my potatoes whilst growing, and after I had dug them.

I am, respectfully, yours,

T. DAUGHTERS.

FAT MUTTON—ROOTS.

It is to be regretted that so little attention is paid to the proper sheltering of cattle in this country. One would naturally suppose that the interests of owners would point out a proper course; and that once systematized, and the advantages of strictly attending to the comfort and convenience of our cattle made manifest, even to the most sceptical, that whole neighborhoods would adopt the system, and that in a reasonable length of time it would very extensively, if not universally prevail. It is lamentable to say that this is *not* the case. For some reason or other, which I have not as yet been able to ascertain, improvements make but slow advances among the farmers. It may be, that they consider improvements as innovations in those customs which have 'grown with their growth.'—Some, with the evidence before their eyes, evidence which they cannot possibly resist or gainsay, refuse to profit by the experience of others. I have several cases in point, one of which I will note. For a number of years I have been in the habit of attending the Philadelphia market, principally with mutton, and as I always per

sonally superintend my sheep and other animals on the farm, and saw that they were regularly and sufficiently fed, I generally brought meat which I was not ashamed of, and which by its good quality, recommended itself to purchasers, insomuch, that I had no difficulty in securing a regular set of good customers, who cheerfully paid a fair price for a good article. Some of my neighbors attended the same market—but as I generally sold out first, they thought I was "uncommonly lucky." Four years since I obtained a quantity of the seed of the French sugar beet, and put in an acre by way of experiment, not in the way of making *sugar*, but the making of *fat*. This first trial fixed me. My cows, sheep, and hogs were very fond of them, during the long and severe winter which followed. They all kept in good heart and condition; what surprised me most was the rapid manner in which my sheep fed on the sugar beet, took on fat; when carried to market the saddles excited particular attention, from their very superior appearance. But it was not in appearance only, the meat was of much better quality, more juicy, and exceedingly tender. The inquiry was, "why, sir, on what do you fatten your sheep?" And when I replied on the sugar beet, hay, and a small portion of corn, it would generally call forth an exclamation of surprise. Ever since I have been a grower of the sugar beet, the meat I take to market is always in demand, and brings several cents more per pound than that fattened in the old way; and yet, strange to say, some of my neighbors, although I have urged them, will not plant beet for their stock. I have been benefited to the extent of several hundred dollars by the introduction of this root—the effects are visible—my neighbors know it—and yet they stand lookers on, halting between two opinions. But light is breaking in upon us, and of one thing you may be assured, that the time is not far distant, *when every extensive stock feeder will be an extensive root grower.*

To the delinquents, and there are many in my vicinity, I would say, "rouse ye from your lethargy, and although for the present season you have lost the advantage of planting the sugar beet and the mangel wurtzel, yet you may in some measure atone for your past neglect, by putting in immediately a sufficient quantity of ruta baga. You have time enough for this, but none to lose. The ruta baga is an excellent root—plant it liberally—cultivate it thoroughly—and you will find your account in it in more ways than one, if you are spared until the ensuing winter. Depend upon it, there is nothing better for cattle than roots, properly prepared. I put in some of almost every kinds; and I find carrots answer well for a change. But with me the sugar beet is superior to all others.

LETTER FROM DR. WILLIAM DARLINGTON, OF PENNSYLVANIA, ON THE USE OF LIME IN AGRICULTURE.

Weschester, (Penn.) Dec. 17, 1832.

Dear Sir:—Your letter, containing a number of queries relative to the operation and utility of lime, in the process of agriculture, was received in the early part of June last: But as I have been much engaged, during the past summer, with duties which required all my attention,—and, as your letter intimated that answers furnished "any time during the present year" would be in season for your purposes,—I have taken the liberty to postpone my reply until now.

I proceed then, with great pleasure, to furnish you with such facts and remarks as my opportunities for observation have enabled me to offer. With a view to render the answers more explicit and satisfactory. I will annex them seratin, to your several inquiries.

Query 1. "*Upon what lands does lime operate most beneficially,*—1. *In regard to geological formation—as primitive transition, secondary and alluvial!!*

2. *In reference to the soil,—as sand, clay, lime, and vegetable matter?*

3. *As indicated by natural growth of timber and plants?*"

Answer. My residence has always been in a primitive region, and my observations very much limited to agricultural processes in soils upon that formation. The prevailing rock here is gneiss,—with occasional beds, or veins of hornblende, greenstone and sceinite. About five miles to the north of us, in the great valley of transition lime stone, stretching from north-east to south-west; and immediately on the northern side of this valley running parallel with it is a broken ridge of hills formed of mica slate,—with beds of serpentine rock and hornblende, on the side next to the gneiss rock, on the south-east. Over the gneiss rock, and among the hornblende, the soil is generally a stiff loam; and there, I think the best effects are perceptible from a given quantity of lime. On the soil overlaying the schistone rock, the good effects of lime are sufficiently obvious, under the management of skilful farmers; but the benefits seem to be less permanent. On the serpentine rock the soil is extremely sterile,—and neither lime nor barnyard manure can be used with much advantage. In the limestone soil of the great valley, where one would suppose it was already redundant, lime is used with advantage; and much heavier dressings are put on, than in the adjacent districts. I cannot furnish the rationale of this practice; but I believe the fact is established, that more lime is required to produce the same beneficial effect on soils resting on limestone rock, than upon those overlaying gneiss,—and some other primitive rocks.

I have had no opportunity to witness the effect of lime upon secondary, and strictly alluvial formations; but the above circumstance has led me to suspect, that the same quantity of lime would not be so signally beneficial in secondary, as it is certain in primitive formations.

Lime, undoubtedly has a good effect in soils which are sandy,—even where sand predominates; but I believe its meliorating properties are most conspicuous in a clay soil,—or rather in a stiff loam. A good proportion of decomposed vegetable matter adds greatly to the beneficial effects of lime; and hence our farmers are desirous to mingle as much barnyard manure as possible with their land dressings, and to get their fields into what is called a good sod, or turf—full of grass roots. Then a dressing of lime has an admirable effect.*—The soils indicated by a natural growth of black oak, (quercus tinctoria) walnut, (juglans nigra) and poplar, (liriodendron)—and those in which such grasses as the poas and festucus best flourish, are generally most signally benefited by the use of lime. In short, I may observe, that lime has been found more or less beneficial in every description of soil in this district. It is most so on hilly, or rolling lands where clay predominates,—less permanently so among the mica slate,—and least of all, on the magnesian rocks. The soil on these last is rarely worth cultivating.

Query II. "*What quantity of lime applied to the acre, upon different soils, at a single dressing, and during a period of years.*"

Answer. The quantity of lime, per acre, which can be used advantageously, varies with the condition and original character of the soil. Highly improved land will bear a heavier dressing than poor land. On a soil of medium condition, the usual dressing is forty to fifty bushels per acre. A deep, rich soil, or limestone land in the great valley, will receive seventy to eighty—(and I am told even one hundred) bushels to the acre with advantage. On very poor land twenty to thirty bushels to the acre, is deemed most advantageous to commence with. It is usually repeated every five or six years—then every time the field comes in turn to be broken up with the plough; and as the land improves, the quantity of lime is increased. The prevailing practice here, is to plough down the sod, or clay, in the fall or early in the spring,—harrow it once—and then spread the lime (previously slaked to a powder) preparatory to planting the field with Indian corn. Every field, in rotation receives this kind of dressing; and as our farms are mostly divided into about half a dozen fields, the dressing of course comes once in

* The yard manure is not usually mingled with the lime, when the latter is first applied. The practice is, to lime the Indian corn ground prior to planting that grain on the inverted sod,—and the ensuing spring, to manure the same field for a barley crop—or to reserve the manure until the succeeding autumn, and apply it to the wheat crop. It is not well settled which of these is the better practice. Each has its advocates; but it is most usual to reserve manure for the wheat

six years, more or less, according to the number of the fields.—Some enterprising farmers, however, give their fields an intermediate dressing, on the sod, after they come into grass, which I consider an excellent practice—tending rapidly to improve the condition of the land.

Query III. "*Is it applied in a caustic or an affete state?*"

Answer. It is usually obtained in a caustic state from the kiln,—deposited in heaps in the field where it is to be spread, and water sufficient to slake it to a powder, is then thrown upon it. As soon as slaked, it is loaded into carts, and men with shovels distribute it as equally as possible over the ground whilst it is fresh or warm as the phrase is; and it is certainly easier to spread it equally, while in a light pulverised state, than after it gets much wet with rain. I am inclined to think too, it is better for the land when applied fresh from the kiln.

Query IV. "*To what crop is it most advantageously applied and at what season?*"

Answer. It is usually applied, as already intimated, to the crop of Indian corn, in the spring of the year—say month of April. Occasionally it is applied previously to sowing wheat in autumn. When used as a top-dressing, on the sod, it is generally applied in the fall—say November. The prevailing impression is, that it is most advantageously applied to the Indian corn crop; and hence the general practice. But the truth is it is highly advantageous at any, and at all seasons, and our shrewd old farmers have a saying, "Get your lime on for your corn if you can,—but be sure to get it on the land, some time in the year."

Query V. "*How is it incorporated with the soil—by the plough or the harrow? and is it applied in any case as a top dressing to grass and to grains, and with what effect?*"

Answer. As already stated, after the sod is ploughed down for Indian corn, it is usually harrowed once, to render the surface more uniform. The lime is spread as equally as possible over the field, and then the ground is well harrowed in different directions, in order to incorporate the lime with the soil. Soon afterwards the field is marked out, and planted with corn. The plough is rarely if ever used for the purpose alluded. I have mentioned above, that lime is occasionally used as a top dressing for grass. It appears to be particularly beneficial to that crop; and answers extremely well when applied in that manner. The practice of applying it to Indian corn as above related, is however, chiefly followed; and the application of a dressing to each field in rotation causes as much labor and expense every year, as our farmer generally are willing to incur. Lime has rarely been used as a top-dressing to *grain* crops, within my knowledge.

Query VI. "*What is the ordinary cost per acre of liming, and the relative profits in increased products of a number of years?*"

Answer. Quick lime at the kilns, usually cost twelve and a half cents per bushel. The farmers generally haul it with their own teams; and the additional expense depends, of course, materially upon the *distance.* It is frequently hauled by them a distance of eight, ten, and twelve miles. The average, perhaps, is about five or six miles. It is delivered to me by the lime burners, (a distance of near six or eight miles) at eighteen cents per bushel. At the rate of forty bushels to the acre, the cost at eighteen cents would be $5 10 cents per acre. It is difficult to estimate, with precision, the relative profits in increased produce: but I can safely say, from my own experience, on a small farm of middling quality, that two dressings of lime at the above rate, in the course of eight or nine years, have more than trebled the products of the land to which it was applied both in grain and grass. It is to be understood however, that the system of *ploughing only so much ground as could well be manured,* was adopted at the same time. I may also observe generally, that the farmers of this district, (who are shrewd economists,) are so well convinced of the beneficial effects of liming, that costly as its application seems to be, they are unanimous in sparing no effort to procure it. Lime has been found to be peculiarly favorable to the growth of pasture, when the farm is otherwise well managed; and as our cattle are mostly in the practice of feeding cattle, they resort to liming as an indispensable auxiliary to successful grazing.

Query VII. "*Is lime applied with yard manures or earthy composts and with what result?*"

Answer. I have already intimated that vegetable matters, and especially yard manures, are highly important in conjunction with lime. Both are valuable, even when used separately, but when *combined* the effect is most complete. If to this be added the great secret of good farming, viz: to plough only so much ground as can be well manured—the state of agriculture may be considered nearly perfect.

Lime is in some instances added to earthy composts, preparatory to distribution on the fields: but it is doubtful whether the extra labor of this method is compensated by any peculiar advantage. It is not generally practised.

Query VIII. "*Is powdered limestone (carbonate of lime) applied to soils; and if so does it produce fertility otherwise than by mechanically ameliorating their texture?*"

Answer. No instance of powdered lime-stone being applied to the soil has come under my notice. I can form therefore but a very imperfect opinion of its utility. If it were even as beneficial as quick lime (which I doubt) I apprehend it could not be procured and applied with less cost and labor.

Query IX. "*On what soils if any in your neighborhood is lime found to be inoperative as a fertilizing application; and the cause of its failure?*"

Answer. There is no soil in this district deemed worthy of cultivation, on which lime is *wholly* inoperative as a fertilizer. On some sterile, slaty ridges, and on magnesian rocks, it has indeed but a slight effect; and even the benefits of barn-yard manure are very transient. In low, swampy grounds also, unless they are previously well drained, the labor of applying lime is pretty much thrown away. There seems to be something in the constitution of magnesian rocks unfriendly to the growth of the more valuable plants.—Indeed there are patches of the soil perfectly destitute of all vegetation. Repeated attempts have been made to cultivate the bases of our serpentine banks; but neither lime, nor manure will enable the farmer to obtain more than a light crop of small grain. Neither clover nor the valuable grasses can be induced to take root and flourish in the ungenial soil. It is, therefore, almost universally neglected.

I have thus endeavored, (in rather a desultory manner, I confess,) to answer your queries according to my best judgment. If what I have furnished shall in any degree, tend to make the subject better understood, I shall be amply gratified.

With great respect, I have the honor to be,

Your obed't. servant,

WM. DARLINGTON.

JESSE BUEL, Esq., *Cor. Sec'y. &c.*

DESTROYING WEEDS.

It cannot be denied by any one that those pests of good farming, noxious weeds, have increased and are increasing, at a most frightful rate in nearly every section of our country. Insignificant in their appearance or results at first, the farmer treats them with contempt, but before he is aware, they have obtained a hold on the soil, which enables the intruders to set him at defiance. The only safe course with weeds is to meet them early in the field, and allow them no rest until the extirpation is complete. When plants are propagated only by seeds, as charlock, stein krout, &c., they can be eradicated more easily, than when they are propagated both by seeds and roots, as johnswort, Canada thistle, elder, &c. If the seed of the first is not allowed to ripen, the danger is past, and consequently careful pulling will destroy weeds of this class; but where the roots retain their vitality, or in other words, the plant is perennial, the labor of extirpation is much increased. In the Genesee country

the stein krout has become so prevalent in the wheat fields, that comparatively little precaution is used against it, and as large quantities of wheat are annually distributed from that section of the State to others for seed, the spread of that weed is of corresponding extent. So with the Canada thistle, that prince of noxious plants; it has become so extensively spread over most of the Northern States, that enormous as the evils caused by its presence on a farm are, it excites little attention, and mixed with clover, timothy, or other grass seeds, is rapidly extending itself to districts and states hitherto exempt. As a first and important step, every farmer should resolve that no consideration shall induce him to allow any foul stuff to perfect its seeds on his farm. Were this generally or universally done, the most effective cause of increase would be arrested at once. It is nothing less than suicidal to the prospects of a farmer, and inflicting great evils on those around him, to allow such plants as the thistle, johnswort, stein krout, charlock, sweet elder, everlasting, daisy, &c. &c. to ripen their seeds, and propagate unmolested on his premises. Weeds that cannot be pulled, should be mown, cut, or beat down, in such a way that no seed can possibly ripen, and it should also be remembered, that all mutilation or injury done to the leaves or stems of a plant, have an effect in retarding the vigor or spread of the roots, and not unfrequently cause their destruction.—*Albany Cultivator.*

INSTRUCTION TO YOUNG MOWERS.

EVERY farmer who has employed many mowers, has had occasion to pity the manner in which some of them "dragged their slow swarths along," while he was delighted with the ease, the rapidity and smoothness with which others, of far less strength, would pass over the field.

The instructions of a kind and indulgent father on this subject are not only fresh in my memory, but have made first rate mowers of many young men, and perhaps may be useful to some of those who may mow for the first time hereafter. I say for the first time, because very few change a bad habit (of mowing particularly) after it is once acquired. "As the twig is bent, the tree is inclined;" so with those who use the scythe. Therefore let the boy of fourteen mow one or two hours in each day, during the haying season, for two or three years, when, by the following directions, he may be able to successfully compete with the strong but illy instructed. Let his snaith and scythe be very light, and the scythe of razor-like edge, and so hung, that when suspended on the finger by the lower neb, the point and heel of the scythe may be at equal distances from the ground. When at the edge of the grass, let an old and good mower, (who is to walk near him half an hour,) instruct him to

stand nearly erect, the hips being further advanced than the shoulders, and under no circumstances to stoop, and when inserting his scythe into the grass be sure to keep the heel nigh the ground; and when cutting the clips and after, let the point be equally near it; let the body turn with the scythe as on a pivot, the heel of the scythe passing within two or three inches of the advanced foot. This will relieve the arms, and so divide the effort, that he will mow with as little fatigue as he can perform light work, and soon laugh at the 'six footer' who stoops to reach his grass.

Let the boy also at first be instructed to clip only ten or twelve inches of grass, until his erect posture and horizontal position of his scythe become habitual, when his love of ease, his interest and desire to triumph, will require a long scythe, perfect in temper, yet light, and from heel to point the segment of a circle about seven feet radii.—*Farmers' Monthly Visitor.*

CORN-COB MEAL.

Sir,—As the question of the value of the cob in feeding, when ground with the corn, is again coming into consideration, perhaps the following extract from "Steward's Stable Economy" might go far to decide it, in the minds especially of those who know that the cob is equal in *quantity* to the corn—the only consideration which is necessary in the present stage of the question: on some future occasion, it may be shown that the cob itself is fully equally in *quality* to the same quantity of oats for this purpose.

"*Condensed food* is necessary for fast working horses; their food must be in less compass than that of the farm or cart-horse, but to this condensation there are limits. Grain affords all, and more than all, the nutriment a horse is capable of consuming, even under the most extraordinary exertion; his stomach and bowels can hold more than they are able to digest; something more than *nutriment* is therefore wanted, for the bowels must suffer a moderate degree of distension, more than a wholesome allowance of grain can produce; they are very capacious; in the dead subject more than thirty gallons of water can be put into them; and it is thence evident they were not intended for food in a very condensed form, for it seems natural that they require a moderate degree of pressure or dilation to assist these functions, they must have something to act upon. Now, when hay is very dear and grain cheap, it is customary in many stables to give less than the usual allowance of hay and corn, but the alteration is sometimes carried too far, and is often made too suddenly: the horses may have as much as they will eat, yet it does not suffice without fodder, and, having no hay, they will leave the grain to eat the litter: a craving sensation of emptiness seems to arise, and the horse endeavors to relieve it by eating straw,

The sensation cannot be that of hunger, else the horse would devour his corn; but whilst he has plenty of grain and plenty of litter, the diminished allowance of hay is borne with impunity. But when a sufficiency is not obtained in *any* shape, the horse loses appetite and becomes emaciated; his bowels are confined, his flank is tucked up, and his belly almost disappears; in general he drinks little water, and when he takes much he is apt to purge. His belly is often rumbling, the bowels apparently containing a large quantity of air, which occasionally produces colicky pains; these horses are very liable to crib-biting and wind-sucking, and it is certain that these diseases are very rare amongst those that live on bulky food.

When the ordinary fodder is very dear, its place must, therefore, be supplied by some other, which will produce a wholesome distension of the stomach, although it may not yield so much nutriment: straw, roots, either or both, may be used in such cases; the tucked up flank, and the horse's repeated efforts to eat his litter, show that his food is not of sufficient *bulk* to sustain nature in her operations. And when *work* demands the use of condensed food in a horse that has been accustomed for some time to bulkier articles, the change must be made by degrees and with the greatest caution; remembering, that coming from grass or the straw-yard, the horse for a time, requires more fodder than would be proper or necessary to allow him at his work, after a season."

Now, it would appear that the cob, ground with corn would be just the proper quantity of fodder for mixing with the corn, the condensed food, for almost all purposes; and nothing, surely, can be mingled with it more readily and conveniently, or so profitably as the cob, which, at the same time, saves the expense of shelling. When, therefore, the philosophy of the arrangement comes better to be understood, we may expect that to grind the cob with the corn will be the general practice, for the feeding of stock of all descriptions.—*Farmer's Gazette.*

TO PREPARE RENNETS.

WHEN taken from the calf, empty and rinse them in cold water, and fill them with salt; then pack them away in a jar and cover them well with salt. To prepare them for use, I take two or three of them and put them into an earthen vessel that will hold about two gallons, and fill it up with sweet whey. After they have soaked for about twenty-four hours, the liquor is fit for use—always remembering to keep it very salt. As the liquor is used out, it should be replenished with sweet whey. When the liquor becomes so weak as to require three times the quantity used at first, I throw away the old rennets, and replenish the jar with new ones. As to the quantity to be used, the time which it takes to coagulate

the milk, should be the criterion. From fifty minutes to one hour, is about the right time. If it coagulates sooner than that, too much rennet is used, and it will make the cheese strong. If milk is the least changed before it is set for cheese, less scalding is necessary. If scalded too much, the cheese is apt to crack.

A. F. BILL.

BUTTER.

The following remarks upon the manufacture and preservation of Butter, were written by the conductor some three or four years ago. With some slight alterations, they are now submitted to the readers of the Cultivator, as containing the most essential rules to be observed in the management of this important household art:

Butter is one of the staple productions of our state; and every hint that serves to improve its quality, or increase its quantity, must be useful. There are various methods of making butter, as from new milk, lobbered milk and cream; and there is certainly a great diversity in its quality. The cause of this difference may partially be owing to the season, the feed and the breed of cows, but most is owing to management. Our dairy women are very much like their good husbands, apt to be somewhat conceited, too wise to learn, and generally believe their own mode the best, and never suspecting that philosophy or science can have any sort of connection with this humble branch of household labor. All seems to be agreed, however, upon the following points:

1. That cleanliness is the first requisite, for many and very obvious reasons.

2. That every sort of liquid should be separated from the butter—because if such is suffered to remain, it soon becomes rancid, and taints the mass.

3. That the salt used to preserve it should be pure, because bad salt will not keep it sweet—rock salt, and that produced by solar evaporation, being deemed best.

4. That no more salt be used, than is necessary to render the butter palatable—all excess being injurious to the taste, and an imposition upon the buyer.

5. That the vessel in which it is packed should be incapable of imparting to it any bad flavor—wood abounding in pyrolignic acid, and red earthen being improper—the first giving a bad taste, and the latter, by reason of the decomposition of the glazing, which contains lead, being in a measure poisonous.

6. That when packed, the external air should be wholly excluded from the butter—because the air soon induces rancidity.

Our dairy women have added two other rules, which they deem all important to the *preservation* of *good* butter, which I am induced to think are but little known and less practised, viz:

7. That no water be suffered to come in contact with the butter in any stage of the process—because it tends to lessen the essential volatile matter, which gives to butter its rich peculiar flavor.

8. To have the salt incorporated with the butter in the first operation of working, and after an interval of twenty-four hours, to apply again the butter ladle until the whole of the liquid is expelled. By this operation the salt is dissolved and effectually blended with the butter, which is free more effectually from buttermilk.

And *we* will add two other rules, viz:

9. When the cream is employed, it should be somewhat sour, though not stale, as in this state the butter more readily separates from the serous or cheesy matter.

10. That the temperature of the cream, when submitted to the churning process, should not be below fifty-two, nor above sixty-two degrees—a lower temperature rendering the separation difficult, and a higher one essentially impairing the quality of the butter. A thermometer with a sliding guage, adapted to this and other household purposes, will cost $2 or $2 50. The temperature may be regulated without bringing water in contact with the cream, by setting the churn in a tub of water, either hot or cold, as may be required to change the temperature of cream.

We sat down to write merely an introduction to two tables, which we are about to copy, and which indicate the temperatare at which cream may be most advantageously wrought into butter. It may be said that these will serve but little purpose, as a thermometer is seldom seen in a dairy house; yet it will show the importance of keeping one.

The Highland Society of Scotland offered a premium on experiments on the temperature at which butter can be best procured from cream. The following tables show the result of a part of these experiments. The detail may be found in vol. vii. of the Society's transactions, p. 194 to 201.

Number.	Date of experiment.	Number of gallons.	Mean temperature.	Time occupied churning.		Quantity of butter obtained			Quantity of milk churned.	
	1825.			h'rs.	min.	lb.	oz.	dwt.	lbs.	oz.
1	August 18	15	55°	4	0	1	15	7.5	8	9
2	" 26	15	60	3	15	1	15	3.2	8	8
3	" 30	15	62	3	0	1	14	0	8	8
4	September 4 . .	15	64	3	1	1	12	12.7	8	8
5	" 9 . .	15	70	2	30	1	10	10.6	8	7

OBSERVATIONS.

"The butter produced in the first experiment was of the very best quality, being rich, firm, and well tasted.

"The second experiment yielded butter of a good quality, and not perceptibly inferior to the former.

"In the third experiment, butter of a good quality was obtained, but of an inferior consistency.

"The fourth experiment produced soft and spongy butter.

"The butter produced in the fifth experiment was decidedly inferior in every respect to any of the former specimens."

Number.	Date.	Heat of cream.	Scotch pints of cream.	Degrees of heat when butter came.	Quality of butter sixteen ounces to the pound	Time of churning.	Weight of cream.	Heat of air at 8 P. M.
1	June 13	56°	16	60°	16lbs. 8oz.	1½ hrs.	4 to pint.	56°
2	20	52	16	56	16 "	2 "	"	52
3	24	52	16	56	16 "	2 "	"	52
4	July 12	63	16	67	15 " 8oz.	30 min.	3 to 14	70
5	Octr. 20	50	16	53½	15 " 12oz.	3 hrs.	4 1	50
6	Aug. 20	53½	16	57½	16 " 5oz.	1h. 15m.	lbs.	

No. 1, shows the greatest quantity of butter produced by the above heats.

No. 2, the best quality of the butter.

No. 3, the fine flavor and quality of this butter could not be surpassed.

No. 4, the quality soft, white and milky.

No. 5, quality injured by long churning.

No. 6, quality most excellent, high in colour and flavor, and solid as wax.

From the experiments, as shown in both tables, it would appear that the proper temperature at which to commence churning butter, is from 50 to 55°, and that at no time in the operation ought it to exceed 65° or fall below 50°—*Cultivator.*

HIVING BEES.

To the Editor of the Mechanic & Farmer:—I have practised two methods of securing new swarms of bees when they leave the old hive, both of which I think preferable to the old fashioned way of rattling all the tin pans and sleigh bells in the neighborhood, until the swarm settles, and then brush them topsyturvy into the hive—my first method is this; as the seasons for swarming approaches, I cut an evergreen, such as fir or spruce, about six or eight feet high, and trim off all the branches on one side close to the tree so that it may be laid flat on the ground, the lower end, or butt is sharpened like a stake and set in a hole made by an iron bar in the ground about ten or fifteen feet in front of the hives. Swarms will very seldom seek any other resting place when a bush like the above is at hand. When a swarm leaves the hive I say nothing, but stand and look on, until they become still and quiet on the bush. I then carefully raise the bush from the hole, and lay it flat on the ground, and place the hive over them. If the limbs on the upper side interfere I press the hive down and lay a stone or some heavy substance on to keep it in its proper place, till the swarm takes possession, which is generally in ten or fifteen minutes. In this way I have never lost a swarm, and have frequently hived a swarm and removed them to the bee house among the old hives in one hour from the time of their leaving the hive.

My other way is about as simple, and as far as I have tried it, equally sure—I take a board wide enough to set a hive on, and two or three feet long, bore a hole in the centre, and drive in a pin, one or two inches in diameter, and eight or ten inches long; I then take two small cords and fasten the end of each to the corners of the board so that they form a loop at each end of the board about two or three feet long; this board thus prepared I suspend from two stakes in front of the hives, with the pin pointing downwards, taking care that the stakes slope towards each other so that the board may not touch at the end, around this pin the bees will cluster, and when they get still, unhook the cords from the stakes, turn the board over carefully, lay it on the ground and set the hive over it, in this way much time and trouble may be saved, or there is no need of watching for swarms, only provide such resting places, and there you will find them. I have left a swarm suspended under the board as last mentioned, through the day and found them safe in the evening, and hived them after the other labor of the day was past. I think on the whole this method the best, as they seem more contented under cover of the board than when more exposed, and not so likely to take wing before they are hived.

J. R. M.

BERKSHIRES.

Farmers differ with regard to the valuable qualities of this breed of hogs. Without ascertaining, as some have done, that they are positively the best breed in existence, one thing is quite certain, that they far excel most of the native varieties raised in this country. Their rapid increase and dissemination for a few years past has been such, that they may readily be obtained with comparatively trifling expense. We hope that all who regard them with suspicion, will examine thoroughly their merits before rejecting them.

One of the strongest objections is their *smallness of size.* It is true they are not equal in this respect to some others. But the following instances will show that they may attain a respectable magnitude at least, and if farmers would cease buying inferior animals and cullings of litters, because they are cheapest, this objection would not, we believe, have much ground for validity. A recent importation by A. B. Allen, of Buffalo, contains a boar and sow, the former weighing five hundred and fifty pounds, and the latter a few pounds less. They were fed on nothing but *grass* for months before weighing. One eighteen months old, was sold in the Albany market in 1839, which weighed when dressed six hundred and thirty-three pounds, and sold for about $56. J. Lossing, of Albany, states that he has one imported male, that at fifteen months old measured six feet five inches from the end of the snout to the root of the tail, and five feet six inches in girth ; that of fifteen slaughtered by the Shakers of Watervliet in 1839, consisting wholly of what are called runts and the cullings of litters, from fifteen to seventeen months old, the average weight was three hundred and thirty-six pounds; that one killed at Shaker village at Lebanon, at two and a half years old, weighed eight hundred pounds, and that he himself killed one at sixteen months weighing over four hundred pounds. The Chairman of the Committee on swine for Tompkins County, in his report, says he recently saw pigs in Rhode Island, a cross between the Berkshire and Byfield breed, (the latter a smaller breed than the Berkshire,) that weighed three hundred pounds each, at a little less than nine months old. J. R. Caldwell, of New Windsor, fatted a pair of Berkshire barrows, and killed them at a little more than a year and a half old, when they weighed 1,020 lbs. They were fed on grass alone during the two summers, and given other feed only a few months before they were butchered. Such instances might be greatly multiplied. They show that, by proper management at least, a large size may be attained.

But *size* is by no means the most important consideration. If a Berkshire at two hundred cuts up as well, and affords valuable parts in as great a proportionate quantity as another hog at five

hundred, who would hesitate between them? Many, in their great eagerness for size, are sacrificing quality. The large bony breed will indeed fill the barrel the soonest,—with heads and shanks, but as somebody has justly observed, it is of far more importance to fill the *consumer*. Accurate experiments are greatly needed to exhibit the relative qualities in this particular, of the Berkshire and other breeds; the best we have seen, are the following, taken from the report of the committee before mentioned. The first is a sow of "common breed," two and a half years old, and weighed when dressed two hundred and thirty-five pounds. The second is a *half blood* Berkshire sow, eighteen months old, and weighed two hundred and four pounds. The first had raised one litter of pigs, the Berkshire two litters. The third example is a half blood Berkshire barrow, eighteen months old, fattened in the ordinary way.

	1st Sow.	2d Sow.	Barrow.
Lard,	26 lbs.	16 lbs.	31 lbs.
Hams,	32½ "	31 "	52 "
Tender loin,	5½ "	3¼ "	5 "
Fat,	8¾ "	6¾ "	9 "
Mess Pork,	96 "	103 "	176 "
Prime "	28¼ "	16 "	26 "
Spare rib,	20 "	12 "	16 "
Head,	18 "	16 "	21 "
	235	204	336

Farmers are usually extremely particular to obtain the full market price for their grain—the loss of ten cents on a dollar by bad marketing would be insufferable. But why is it, that they are not as careful in relation to the market at home, the market of their own making, which is to tell whether they get the same return for twenty bushels of corn, as another man with an *improved Berkshire market* gets for ten? A near neighbor lately butchered a few pigs, several months old, a part of half blood Berkshire, and the rest full blood; the latter were two months younger, and received similar feeding in every respect, but averaged, on killing, full weight with the half bloods. The half bloods were a cross with a large and excellent native variety. It is the quantity of flesh and fat made, (and little offal,) for the small quantity of food given, which pre-eminently distinguishes the Berkshire breed, which every one acquainted with them have observed. A striking instance of this quality, is given by Wm. P. Curd, of Kentucky, of a full bred boar, which at eleven months was castrated in consequence of an injury rendering him useless—he weighed at that time one hundred and twenty-two pounds. "After being fed sixty-four days, he was weighed, and lifted the beam at four hundred and ten pounds, showing the astonishing gain of *four and a half pounds a day*. He is now fed solely on grass, and weighs five hundred and fifty pounds at the age of two years."

In consequence of the well attested excellence of this breed of hogs, many attempts will doubtless be made to impose on the farming community; caution will therefore be necessary in procuring animals, as well as in deciding on qualities which may belong only to the genuine breed, and not to spurious ones.

Farmers who are in possession of Berkshires, would do the community a great favor, as well as themselves, by instituting experiments, by *accurately weighing and measuring*, showing the quantity of food they consume, their inerease in weight, and the relative proportion of the different parts yielded in cutting up; and if these were accompanied with experiments of a similar character on the common and other breeds, they would be of still more value. The labor of such experiments would be very trifling.

MARKS OF GOOD WORKING OXEN—FEEDING—MANAGEMENT, &c.

The writer of the following has a great deal of practical knowledge, and is distinguished for his sound reasoning, and intelligence on various subjects—on the following, he is probably excelled by no man in the country:

To the Editor of the Yanke Farmer:—The following I give as my opinion, concerning the *marks of a good working ox, &c.*

1. Long head, broad and oval between the eyes, the eye keen, full and pleasant, such are marks denoting ability to receive instruction, and a readiness to obey.

2. Forward legs should be straight, toes straight forward, hoof broad, not peaked, distance short between ancle and knee.

These properties enable the ox to travel on paves, and hard ground.

3. Full breast, straight on the back, round rib, projecting out as wide as the hip bones, these are indications of strength and good constitution.

In oposition to the above, we find the short faced ox, starts quick at the whip, but soon forgets it.

If the ox toes out, the strain comes on the inside claw, and when travelling on hard road, he will be lame at the joint between the hoof and the hair. When the toes turn out, the knees always bend in. The crooked kneed ox, is apt to become lame by holding heavy loads down hill.

Comparison, a straight stick, when set on one end, will bear up more weight than a crooked one.

The ox with very large horns near the head, is apt to be lazy, and will not stand the heat of the day. The black eyed ox, is apt to run away, oxen working in the same yoke should carry their heads on a level with each other.

Oxen working on a stone-drag, and on the foot of a plough, on the sled spire, or cart spire, twitching stones or timber, should carry their heads well up, as it will enable them to do this kind of work

much easier. Oxen that work as leaders forward of other oxen, should carry their heads low.

Oxen should be shod with a broad shoe. To travel on hard road, the shoe on the forward foot should be set back at the heel nearly half an inch further than the hoof bears upon it. I have frequently known oxen to be lame in consequence of the shoe being too short at the heel.

The best way of feeding oxen for hard work, give each ox two quarts of meal, wet, and mixed with chopped hay three times a day, and what hay his appetite naturally craves besides. This is the highest feed the working ox ought to have, and will enable the good ox to work ten or twelve hours every day. I think rye and indian meal mixed together is better than clear indian. Farmers who do not work their oxen *hard*, have no *need* of giving them so much meal.

Steers should be broke quite young. Boys should never yoke them for the sake of a frolic. I think it a good plan for farmers, when they are going a short distance after a load, to take their steers with them, and let the steers lead the team towards home.—They will learn to draw towards the barn much better than from it. I have found it much easier to learn steers or oxen, to *back* by giving them a gentle slap on the nose with the bare hand, than by striking them with the butt end of the whip stick, which is too often done.

When steers are first yoked, they may be allowed to walk about in the barn yard, until they are satisfied the yoke will not hurt them. Working the young steer carefully causes his strength to gain with his growth, without injuring the latter.

The best pair of working oxen I have ever known, were handy before six months old, and are now owned at the State Prison in Charlestown, Mass.

From experience, I do say, in my opinion, steers broke quite young, are worth, for hard labor, twenty five per cent more than oxen that have come to their growth before they are yoked.

One word to the drivers of Oxen: Feed regular, and do not forget the card, especially when they are shedding their coat. Have the yoke the right length, that your oxen may walk up straight.—Let the bows suit their necks, the yoke and bows to the leaders, should set a little snugger than to the nib oxen; never use the whip only out of necessity—when you are about to strike the young steer, ask yourself, Will he know what I strike him for? Let each ox have a name; and be sure that every ox in your team knows his name; never speak a word to an ox without a meaning. Have a particular word to start your team by, that all may haul together, never hurry your oxen when your riding behind them, lest you learn them to haul apart.

A. G. SHELDON.

Wilmington, March 13, 1841.

HORTICULTURE.

VEGETABLE GARDEN.

CARROTS.—Daucus.

The following are the principal varieties cultivated for culinary purposes, and for supplying the kitchen regularly at all seasons of the year.

1. Early Horn.—This sort is of Dutch origin, and is the forwardest in ripening, and the best adapted for forcing. It grows much shorter, and requires less depth of soil than the other varieties.

2. Long Altringham (a town in Cheshire.)—This is a very fine carrot, and in rich light ground will grow to a large size. It is one of the best for a general crop, and for preserving throughout the winter.

3. Long Orange, or Sandwich, (a town in Kent.)—The carrots grow remarkably fine in that part of the country, and many scores of tons are annually sent from thence to the London markets. This, together with the next, are cultivated as the two leading sorts.

4. Long Red Surrey is considered as one of the best carrots, being of a good colour, size, and flavour. Large quantities of this variety are grown in great perfection in the midland parts of Surrey, where the land is a deep sandy loam, and very suitable for their growth.

5. Long Studley is also a good sort, and is extensively grown in many parts of the country.

6. Long White is but little known at present in our markets, and seldom grown, excepting by those who are fond of French dishes, for which it is much used, and especially for soups. It is certainly a very delicate root, but is best adapted for summer and autumn use, as it does not keep so well through the winter as the common red carrot. *

Culture.—In the culture of this nutritious and useful vegetable, a deep, light, rich, sandy soil should, if possible, be employed. The soil should be well manured the preceding year; for, if the manure is applied at the time the seed is sown the roots are apt to be affected with the canker. If the ground is not of the quality above stated, it should be trenched to the depth of eighteen inches at least, and at the same time well broken; for, if this is not well done, the roots are apt to spread in a lateral direction, and become branched.

* This Carrot has been lately introduced into the United States. We have grown it for the last seven years, and think it the very best for the table (being the most delicate) of any we are acquainted with.—Ed. So. Agr.

If young carrots are required early, the seed of the Early Horn variety should be sown on a warm south border in February, or early in March.

To procure young carrots throughout the summer and autumn seed must be sown of the Early Horn kind about every six weeks, from the end of February till the beginning of Sept.; the last sowing is made for plants to stand the winter, and afford young roots early in spring.

For the general and principal crop, the author has found the second or third week in February to be a good season, though he has known good crops produced from sowing at the end of March and beginning of April; this, however, depends entirely on the weather. For a winter crop, they should be sown towards the last of August, and through the month of September. These should be European seed.

In sowing carrot seed a calm day should be chosen, as the seeds are very light; they should also be rubbed between the hands, and mixed with some dry sand or wood ashes, to separate them as much as possible. The common method of sowing them is upon beds three or four feet broad, and afterwards raked in smoothly and evenly; the teeth of the rake ought to be wider than are generally used, as the seed is apt to be drawn up in heaps. The author considers that sowing the seed in shallow drills, nine or twelve inches apart, is a preferable way, as it admits of the hoe being made use of with greater facility in thinning and cleansing them from weeds; and, in a given space of ground, a greater crop and finer roots can be produced than by sowing broadcast in beds.

As soon as the plants are up, and can be well distinguished, a hoe about three or four inches broad should be used to thin and clear them from weeds. Thin from three to five inches distance such as are designed for drawing young; but the main crop intended for large and good sized roots, must be thinned to six inches. The whole should be kept clear from weeds in their advancing young growth. Towards the end of October they will have attained their full growth, and in the beginning of November, as soon as the leaves begin to turn yellow, the roots can be taken up in a dry day, the tops being cut off within an inch or two of the crown, and can be packed among dry earth or sand in the store-house for winter use. They will keep well, pitted the same as potatoes. In either way, if frost be excluded, they will keep perfectly well until March or April of the following year. This of course applies only to those sections where the winters are severe. In the neighborhood of Charleston this would not be necessary, as our winters are never severe enough to injure them.

CAULIFLOWER.—Var Brassica.

There are two varieties of the cauliflower, the early and the late, which are alike in their growth and size, only that the early kind, as the name implies, comes in about a week before the other, provided the true sort has been obtained.

Both the varieties are of a delicate nature, being generally too tender to resist the cold of the winter season without the occasional aid of glasses or other means; and the sight of many acres overspread with such glasses, in the vicinity of London, gives a stranger a forcible idea of the riches and luxury of the capital.

Culture.—The proper seasons for sowing the seed are, for the early summer crop, between the 18th and 24th of August, (the early date for the northerly parts of the State.) The plants which rise in the same season are to be pricked out, and preserved through the winter under hand glasses, frames, or other conveniences; and being planted out in spring, arrive at perfection the ensuing summer, from May, to July and August. For the late summer crop to succeed the above, the seed must be sown in February, or early in March, the plants being set out in May, to come in for use in August and September: and, for the Michaelmas or autumn crop, the sowing should be performed about the middle of May, and the plants being set out in July, come to perfection gradually in October, but are never so large, white, or perfectly headed, as the summer crops.

For the purpose of raising cauliflowers, in the greatest perfection, a bed of the richest light earth, in a free exposure, is to be prepared at the proper period, by digging it well over neatly, one spade deep, and breaking the surface fine; then sow the seed, and rake it in evenly and lightly; or, before the seed is sown, gently beat and smooth the surface of the bed with the back of a spade; sow the seed and sift over it about a quarter of an inch of light mould.

When the weather is dry, gentle waterings in the evening are necessary, both before and after the plants appear; and if very hot dry weather, it is advisable to shade the bed with mats, or some light covering, in the heat of the day, but by no means let the plants be drawn up weakly. Should they rise too thick, or in clusters, they must be thinned out, so as to leave them single at a small distance apart. All the culture necessary afterwards is occasional watering and weeding, until towards the latter end of September, when their leaves will be an inch or two broad: a quantity of the best plants should then be pricked out in three feet beds of rich earth, in rows three or four inches apart, rejecting all crooked and, as we gardeners term them, black-shanked plants. As soon as they are planted, a moderate watering should be given, which, when the weather continues dry, may be occasionally repeated.—

The plants must remain there till about the end of October or beginning of November, when preparation must be made for transplanting them into their winter quarters, some being planted out under hand-glasses for the earliest crops, others into garden frames, to be occasionally protected by glasses till planted out in spring.

The plants intended to be wintered in frames may occasionally be pricked out at once from the seed-bed into the frames to remain.

For the plants to be cultivated under glasses, a proper bed of the richest mellow ground should be provided, in the warmest and most sheltered part of the garden, in a free exposure to the full sun. The front of a south border, should there be one of sufficient length to spare, will be the most eligible for this purpose. If the soil is not considered of sufficient richness, it should be well manured with the best rotten dung, spread equally over the ground at least three or four inches thick, and trenched in a good spade deep, and buried equally. Then form the ground into beds three feet wide, with two alleys, for the convenience of going in to raise the glasses and set them off and on. After the beds are properly levelled, a line should be marked out in the centre of the bed as a mark to place the hand-glasses, which should be three feet apart. The plants are then put in, four straight and healthy ones being selected for each glass—they are planted about four inches apart;—a little water is afterwards given, and the glasses put on and kept close for a few days till the plants have taken root. This being observed, prop up the glasses about three inches high on the sunny side, to admit air; and if in the course of a fortnight the weather is dry and favourable, the glasses might be taken quite off in the day-time, but must always be put on again at night. During the winter the glasses should be kept almost constantly over the plants, but propped up during mild weather, on the warmest side, for the admission of air. When cutting winds or frosty weather prevail, they should by kept as close down as possible; and for their more certain protection (especially in private and small gardens, where there is not a large quantity of glasses,) on the approach of such severe weather as was experienced in the last winter of 1838, and which destroyed nearly all the cauliflowers in the country, some dry litter or fern laid down as close as possible about the lower part of each glass, and raised higher as occasion may require, would do much towards the effectual preservation of the plants.

Any further attention the plants will require till spring consists principally in giving air at all such times as the weather will admit of the picking off the decayed leaves; and a little lime and soot mixed, occasionally strewed lightly upon the surface, under the glasses, will greatly protect the plants from the depredation of caterpillars, and slugs, &c.

With respect to the plants which remain in the frames, nothing more is necessary than to give them plenty of air in favorable weather; to protect them with additional coverings of garden mats when the frost is very severe, and to look them over occasionally, to pick off any decayed leaves, insects, &c The author must caution the horticulturist against allowing the plants to be drawn up, as by so doing he runs the hazard of losing the crop by the plants becoming button-headed, or producing very small heads, while in the frames. This arises in general from over-nursing; therefore, the more hardy the plants are brought up the better.

When there is a want of frames, cauliflowers may be protected by planting them in three or four foot-beds, and covering them with mats; or by planting them close under a south wall, and occasionally covering them with some dry litter in hard weather.

Previously to planting out the cauliflowers wintered in frames, the plants under the hand-glasses should be looked over, and if there is a deficiency of less than two, occasioned either by their prematurely running to flower or other causes, this deficiency should be made up with the strongest and best plants in the frames, which if carefully raised with the point of a trowel, to preserve the fibres of the roots, will receive but little check in their removal, and quickly succeed the more permanent plants.

In the spring-culture of the plants under hand-glasses, they must be thinned out, and one or two stout plants left to each glass; the mould should be stirred up, and a little drawn up round their stems, and as the plants advance in growth, the earth should be formed into a sort of basin under each glass, the better to contain the necessary waterings both before and after the glasses are entirely removed. In proportion to the advanced growth of the plants, the benefit of the full air in mild days, and that of warm showers, by occasionally setting the glasses wholly off, must not be omitted, always taking care to defend them during the night, and in cold rains or boisterous weather. When the weather becomes warm, and the plants are grown too large for the glasses, they should then, by degrees, be fully exposed night and day, so that by the latter end of April the glasses may altogether be discontinued. At this period, if the weather is hot and dry, moderate waterings will be of utility in promoting the progress of the plants to maturity. Towards the latter end of May some of the forwardest plants will begin to show flower, at which time they should be examined daily; and whenever a flower appears to be advanced in growth, turn down some of the inward leaves over the head, to screen it from the sun's rays and from rain, in order to preserve it more white and close, as the excellence of the cauliflower consists not only in size, but in the whiteness, and compact growth of the head.

In gathering or cutting cauliflowers, the flower head should mostly be cut off with some inches of the stalk, together with most of the surrounding leaves, which should be trimmed down nearly equal to the circumference of the head, especially when for present use; but those required to be kept a few days, or intended for market, should have the full leaves to continue, and be trimmed off as they are wanted. As the stalks of these plants never produce sprouts, as in those of the cabbage kind, they should be moved as soon as the head is cut. In regard to the plants which were wintered in the frames, as the spring approaches they should be inured by degrees to the full air, by taking the glasses off entirely every day, and gradually leaving them fully exposed at night, to harden them for their removal into the places where they are to remain. From the middle of February till about the same time in March is the best time for transplanting all the plants wintered in frames or elsewhere, as well as the superfluous plants taken from under the hand-glasses. For this purpose an open spot of the richest ground should be selected, which having been well manured, dug over, and levelled, will be ready to receive the plants. A line should be put down, and the plants planted at the distance of two and a half feet apart every way, and watered at the same time; and occasionally afterwards, in hot and dry weather, till they arrive at maturity. They require but little attention afterwards. Hoeing and keeping the ground clear of weeds and drawing a little earth round the stems is all that will be necessary to be done, till the plants arrive at perfection, which they will do in succession, until the middle of August, when they are succeeded by the late summer crop.

For the culture of the late summer crop, it is necessary to raise a proper supply of plants in spring, by sowing the seed about the end of January, or beginning of February, on a slight hot-bed made for a one light frame, in the same way as advised for the August sowing. The plants will rise in a few days, at which time the air must be freely admitted; and in dry weather some light waterings must be given. When the plants have leaves about an inch broad, prick them out upon another moderate hot-bed, which will forward them considerably. In the course of a month or six weeks, the plants, after being properly hardened, will be of sufficient strength and size for finally transplanting into the open ground, exactly the same as before mentioned for the main summer crop; they need not, however, be planted quite so far apart either way. Their necessary after-culture is also the same.

For the autumnal, or as it is called, the Michaelmas crop, which for many years the author grew remarkably fine, the seed of the late sort of cauliflower (if it can be had,) should be sown on a light rich spot of ground, on or about the 24th of May, attention being paid to shade and moisture, which at this season of the year are

very necessary. When the plants are sufficiently up, they should be thinned to the distance of an inch apart, and in a fortnight afterwards to full three inches: they are thus to remain kept clear of weeds, and watered occasionally, until they are finally planted out, which, on an average, will be about the third week in July, in the same manner as directed for the former crops. They begin to show heads towards the end of October, and continue a great part of December, or sometimes, in mild weather, till after Christmas. Such late flowers as have not perfected their heads may, on the approach of frost or other bad weather, be taken up and housed. The cauliflower is so great a favorite with most persons, that many ways have been devised for preserving as long as possible such as have begun to flower. For this purpose the author has practised the following method with great success. On the appearance of frosty weather, he had the plants taken carefully up in a dry day, with as much earth as would adhere to their roots, and carried into any sort of dry shed, previously prepared on the floor or ground with eight or ten inches thick of moist sand or light earth: they were then planted so as nearly to touch each other, and regulated according to their different growth. In this situation they remained, and most of them produced tolerably fine heads before and after Christmas. Nothing more was necessary than to look them over occasionally, and pick out the decayed leaves, &c.

When a conveniency of this sort can be procured, any skilful gardener will be enabled to supply a family with this delicious vegetable, after all the plants in the open ground are destroyed; he may thus send the cauliflowers to table as a dainty dish, and will no doubt be rewarded by the commendations of his employers.

[To be continued.]

ON ACCELERATING THE FLOWERING OF PLANTS.

Plants resemble animals in many things, and in no one more than in their respective periods of adolescence; that is, each requires a certain lapse of time between rising from the seed and producing flowers and fruit. Some genera re-produce themselves by seed, at a very early period of their lives; others require several years before their fructiferous organs are developed.

That the fructiferous organs occupy a central station in every grand division, as well as in every subdivision of a plant, is very obvious. Look at the cauliflower, for instance; we see here a system of roots, a stem invested with a certain number of leaves, surrounding the head of flowers which is seated on the apex of the stem. When its investment of leaves is developed the head of flowers come forth, blooms, ripens seed, and then the whole dies. This process of growth obtains in all the plants of the order *Cru-*

ciferæ which are culinary and herbaceous; all these also being biennials, if sown at their natural season, viz. when the seeds are ripe.

That their period of adolescence may be very much shortened, is well known; this happens in consequence of too early sowing or other mismanagement. If cauliflower seed be sown in the beginning of July, the greater number of seedlings will be so much excited by the warmth at that season that nearly the whole will show flowers before the winter; but this answers no purpose of the cultivator, because the whole plant is diminutive and useless, the head being so small that is technically called "a button."

The right management of the cauliflower aims at two concomitant results, *early*, and at the same time *large* flowers. The seed for the principal spring crop is therefore not sowed till after the middle of August, when the nights are lengthening and the growing season on the decline. The young plants then partake of the torpor which seizes all vegetation. In this state they are protected through the winter, and all means used to increase the bulk of the plants in order to have bulky flowers. These means are protection from frost by coverings of hand-glasses or glazed frames, a rich compost of soil to grow in, and liberal supplies of water when necessary. Under this treatment the plants develop themselves slowly but sturdily; and, favored by the genial advancing season, begin to yield their heads during May and June.

Now, although it be desirable to have cauliflowers as early in the spring season as possible, yet, from the peculiar character of the plant, and of that part of it which is eaten, it cannot be forced to yield *large*, though nothing so easy as to cause it to yield *early* flower-heads, as before observed, either by neglect or design; for, by keeping the plants under glass, too closely crowded together, and in poor and perfectly dry soil, the whole will probably run to flower in March and April. The reason appears to be this—the plant, like all others, is composed of two constitutional principles; the first are the exterior appendages of the flower, the second is the chief essential, the flower itself. These, however closely connected and necessary to each other, are capable of being acted on separately, according as one or other is more or less excited. If the appendages receive rich and moist nourishment, and be placed in a moderate temperature, they become very much amplified, and progress before the fructiferous principle, the latter *pausing*, as it were, to gain lateral bulk; and when the former have gained such a size as will enable them to exercise their functions in perfecting the flowers and seed, then the flower follows of course. But on the other hand, if the appendages be stinted in the requisite supplies of rich food, water, space, fresh air, &c., they are arrested in growth, and the vitality residing more powerfully in the interior than on the exterior of the system, the centrally placed flower re-

ceives the whole vigor of the plant, and consequently is prematurely impelled into view.

This appears to be the cause why all the *Brassicæ* tribe of plants are apt to "button" or "run away," as it is commonly called; and why so few can be forced to yield their thickened stems, as the turnip; their accumulated leaves, as the cabbage; or their flowers, as the plant just described.

But there are other descriptions of plants whose flowering and seedling may be accelerated by early sowing and forcing, either by simple protection or by giving artificial heat. These are annuals, or such plants as require a period of six or seven months to arrive at maturity. Such are the different sorts of corn and pulse; the first are compound plants, that is, they are not like the cauliflower, supported by one root, producing one stem, but have an aggregation of distinct tufts of roots, each supporting its own stem and fructification. These stems are very simple in structure, and are invested in but a few linear leaves, so that they are quickly produced; and as the swelling of the grain does not appear to depend on the amplitude or duration of the foliage, it is quickly fugitive.

The different sorts of pulse, viz., common and kidney beans, peas, tares, &c., rise from the seed with one stem, which afterward becomes more or less branched. Their flowers are not terminal, like the cauliflower, but axillary, that is, growing out of the angles formed by the leaves and stem; consequently the lowest flowers appear first, and the bloom is continued consecutively upward so long as the soil, the situation, or the season favors the extension of the plant. Now here it is to be observed, that the length of stem between the root and the first flower determines not only the earliness of the variety or species, but also the period intervening between seed time and harvest.

From this portion of practical knowledge a practical rule is to be derived, namely, *the earlier we sow the earlier we shall reap.* This rule, however, can only apply to hardy annuals, and perhaps to some few biennials; for instance, if we sow early frame, or Warwick, or Charlton peas in the month of October, and guard them from the severity of the winter, they will be podded sooner than if sown in any of the spring months, notwithstanding the latter sown crop will grow to greater bulk of straw, and yield a greater quantity of pods. This appears to be such a self-evident result that it may give cause for wonder why it is at all stated. But the reason for the statement is intended to counteract an opinion gravely promulgated, that *bulk* and not *age* gives maturity, or early ripeness; and hence a rule has been laid down, advising common peas and beans not to be sown till the spring weather has warmed the ground, thus securing rapid growth and earlier podding than if sown in autumn. To practical readers this idea needs no refutation; nor is it necessary to marshal proofs of its erroneousness, because that part of

the stem between the seed and the first flower is slowly though completely developed during winter, and the floriferous part in the spring, so that such plants are in fact one complete stage *in advance* of spring-sown plants.

The advantage of accelerating the fruitfulness of tender culinary vegetables has been ingeniously and successfully put in practice by an able horticulturist, Mr. Cuthill, of Parson's-green, first communicated to the *Gardener's Magazine*. This practice consists in obliging (we may say) kidney beans, both dwarfs and runners, to pass their adolescent stage under glass in the spring; and soon as frosts are no longer dreaded, are planted in the open air, when the plants immediately begin to bear. This is really a very useful expedient, as well for market gardeners as others.

The same tact is had recourse to in the culture of melons, cucumbers, and many of our tender annual flowers; that is, compelling them to pass their youth in a preparatory asylum, in order to make them yield their fruit as early in our summer as possible.

From the consideration of herbaceous plants we naturally turn to shrubs and trees; and here the description of the developement of the cauliflower, and other similarly constituted herbs, equally applies. The seeds of chesnuts and walnuts are sown; one or more stems rise, and become branched in the air; but they are for some years barren, because the fructiferous organs have not yet thrown off their investment of leaves, with which each is environed in the bosom of each bud. The flowers, therefore, cannot come forth till the stem, branches, and twigs are so far elongated as to unfold the inner coverings of the floral members and allow them to come forth. The same is the case with other fruit trees, when raised from seed. Apple and pear trees, when raised from seed, for the purpose of obtaining new varieties, do not present their flowers till the sixth or seventh year, for so long is their state of adolescence. These trees, however, are seldom propagated in this way, and for two special reasons; because the true character of the sort can very seldom be perpetuated by seed, and because waiting seven years for the fruit is a loss of time. The kinds are therefore increased by budding or grafting, by which means an aged and fructiferous head is obtained in a comparatively short time. Sometimes, indeed, where due precautions are taken, flowers often, and occasionally fruit, are borne on the graft inserted in the same year.

It must be observed, however, that buds always, and grafts most frequently, require a season of barren adolescence, like seedlings; but this proceeds from the luxuriance of growth with which both commence their career when united to a vigorous congenial stock; as it is well known to practical men that both may be made fruitful in a very short time after their union with the stock.

From the foregoing remarks, it will appear that by starving the cauliflower, or any other vigorous growing herb whose flowers are

required, the latter may be produced at almost any time before the regular season, were they worth the trouble. And by similar means of checking the growth of luxuriant growing fruit trees, they may be very early thrown into a bearing state, provided they are in a favorable soil and situation.

A few more particulars respecting the culture and forwarding cauliflowers, peas, &c. might be added here, but these must be taken up at another opportunity.—*Horticultural Register.*

THE FLOWER GARDEN.

PERENNIAL BORDER FLOWERS.

SOIL AND COMPOSTS.

In the subjoined list of border flowers, the several sorts of soil in which the different species thrive best are pointed out; though few cultivators are so particular as to attend to this, and by far the greater number of sorts may be brought to flower tolerably well in any ordinary soil.

When it is determined, however, to introduce any of the soils or composts indicated in the list, such as sandy loam or peat, the common garden soil should be dug out to the depth of a foot and a half or two feet, and to the diameter of the probable extent of the roots intended to be planted. This must be filled up with the appropriate soil, and what has been dug out must be spread over the border, or carried elsewhere.

It is in the greater number of cases preferable to be rather sparing of manure during the general growth of plants, though a month or two previous to blooming it would tend to invigorate the plants, and cause them to produce larger, if not more numerous, flowers, to top-dress with rich compost, or rotten dung, and still more to employ liquid manure. It is not usual, however, to take all this trouble, and it is only mentioned here as an improvement which, those who choose may try with the certainty of success.

The drier the soil is kept, consistently with the plants being kept from flagging or withering, the sooner in general they will flower, and the contrary.

TRANSPLANTING.

In the article on *Shifting* in a preceding page, it has been shown, that when plants of any particular sort are grown for several successive seasons on the same spot of ground, the soil becomes deteriorated, and is thereby rendered unfit to support them in a thriving state of growth. This principle requires to be impressed upon the cultivator peculiarly, with regard to perennial border flowers, which

by many appear to be considered as fixtures, requiring little attention besides trimming them a little when they grow straggling or too luxuriant, and cutting down the flower stems when they begin to wither and look unsightly. Now as this sort of management is, to say the least of it, far from good, it must be important to give a few details in elucidation of a better mode.

It appears to me that the natural indication of the soil being deteriorated by any sort of plant, is shown by its efforts to escape from the spot where it grows; and that on the same principle the sorts of plants which most quickly, or to the greatest extent produce deterioration, are providentially endowed with the means of diffusing themselves farther from the mother plants than those which have a slower or less extensive deteriorating effect.

These means are, suckers, offsets, or runners above ground, exclusive of the diffusion of seeds and new root-stocks *(Rhizomata,)* bulbs, corms, or tubers, beneath the surface of the soil.

Let us take an example from the perennial asters or the willow herbs, or from the fragrant coltsfoot, which are so freqently, in ill-managed gardens, allowed to spread about the borders, send up suckers in all directions of them, roots, shooting away under ground from the original mother plants to escape from the deteriorated soil. These suckers, if permitted to grow undisturbed in the new soil into which they have pushed, will be found to send up much stronger flower-stems than the original plants; for these will continue to dwindle every successive year, and will at length perhaps cease to flower altogether.

All such plants accordingly ought to be regularly transplanted every year, either when they have done flowering, or in the early spring, when they are just beginning to grow. If the plants are in pots, it will tend to strengthen them to turn them out, and break off the suckers where they come off from the roots, before they appear above the surface of the ground. The curtailment of the suckers, however, is only a make-shift expedient, for, if our principle, is correct, the suckers would not readily form unless induced thereto by the deterioration of the soil.

The doctrine is farther proved by the further efficient means furnished by Providence to the plants just mentioned for scattering their seeds, all of them being provided with down to float about on the air, as if it were not enough that they could send out suckers from the tips of their extreme roots a foot or two from the mother plants.

As examples of offsets, let us take the common alyssums, the house-leek, and the Nepaul cinquefoil *(Potentilla Nepalensis.)* These do not push roots far under ground in order to send up suckers from their tips, but send off shoots which spread away from the mother plant on the surface.

Now it will be obvious to observation, that the best flower-stems will rise from the outer shoots, while those from the centre, where the original root was planted, dwindle in size and flower badly. Frequently the plants become quite naked of both stem and leaves in the centre, all their vigor verging to the circumference as if the deteriorated soil was poison to their existence,

No plants of this description should be suffered to grow for more than one season in the same spot without being transplanted.

In the case of runners, such as in the creeping cinquefoils (*Potentilla humifusa, P. diffusa*, &c.,) and the Indian strawberry *(Fragaria Indica,)* there ought, according to our principle, to be a more rapid or extensive deterioration of the soil than even in the preceding cases, indicated by the great length to which the runners extend from the original plants.

It will be good management to have young plants, as frequently as possible, to replace the old plants: and to change the places of the particular sorts once in every season or every two seasons, according as deterioration is indicated, or the contrary.

There are, however, several exceptions to the general rule, such as the everlasting pea vetch *(Lathyrus latifolius,)* which, as already mentioned, will not flower after transplanting, for one and sometimetimes not for three seasons.

TRAINING AND BLOOMING.

In all the sorts which grow tall, it will be necessary to train them to sticks, at least if they are not strong enough to support themselves. These sticks should be proportioned in size to the stems they are meant to support, so as not to appear more clumsy than necessity shall require.

Some sorts, such as several species of *Aster* and *Phlox*, will be sufficiently strong to support themselves, but will require for this purpose to have all the stems of a clump tied together with strong bass or twisted hemp. The flexible wire sold for training wall trees, may answer in some cases better than any thing else.

It will tend to improve most flowers in size and beauty, to top-dress the beds some weeks before blooming with a quantity of well-rotted dung, and it will be still better to supply them occasionally about the same period with rich liquid manure. This will be greatly preferable to having the soil of the border previously too rich, which is more apt to produce luxuriant foliage than a fine bloom.

The vigor of the flowering branches will likewise be much increased by trimming off the spawn of suckers from the roots, as well as all side shoots which are slender and weak. For the same reason, most sorts, though not all, will have their blossoms increased in size by thinning out the flower buds, as directed for auriculas, carnations, and other florists' flowers.

Bright sunshine or rain has a very destructive effect upon all fine blooms, in spoiling their colors and causing them to fade soon. Border flowers, however, are seldom protected from either, as it is in most cases too inconvenient and troublesome to attend to it. In the case of any very choice sort, however, it may occasionally be had recourse to as directed above for carnations.

CROSSING.

From the numerous facts detailed in preceding pages, and from the principles of crossing so well established by experiments in the sorts which have already been operated upon, we are fairly entitled to infer, that the art is still in its infancy, and that many of the border flowers which now excite little notice, might be brought by care and perseverance to rival in beauty and variety the dahlias, the heartsease, and the calceolarias; which, within a very few years, have advanced rapidly and deservedly in public favor.

Amongst others Mr. Herbert, to whom we are indebted for some of the best experimental crosses of flowers, mentions *Potentilla* and *Anagallis*, "in the last of which," he says, "I have seen a remarkable result in the production of a reddish purple flower by the union of the orange with the bright blue." We ourselves tried, but without success, to cross the common scarlet *Anagallis* with the blue Indian one.

Success would be very probably in crossing various species of leguminous plants, such as the perennial lupin *(Lupinus polyphyllus,)* with some of the other species; or some of the pea-vetches, such as *Lathyrus latifolius* with *L. grandiflorus*, or even with the sweet pea *(L. odoratus,)* by which means a fine-scented perennial might probably be produced. We found these inferences on the success which has attended such crossings in the case of other leguminous plants, as in the following experiments.

Dr. Weigmann, by trying together the garden bean *(Vicin faba hortensis,)* and the common vetch *(V. sativa,)* "obtained," says Mr. Herbert, "cross-bred seed." The seedlings from the bean had flowers more purple, smaller pods and seeds, which when sown again, yielded plants that appeared to him not distinguishable from what he calls the known red-seeded variety. Those from the vetch showed also a difference of blossom. In 1823 he sowed the field pea *(Pisum sativum)* and the common vetch *(Vicia sativa,)* together. The seedlings showed a departure from the natural color, and yielded grey seeds. From the training *Phaseolus vulgaris albus* and *Phaseolus nanus* which does not twine, he obtained crosses; some seedlings of the latter twining, and of the former bent and crooked, but not twining. From the common vetch *(Vicia sativa,)* and the lentil *(Ervum lens,)* he also obtained a fertile cross. If these facts are correct, it is clear that the closely allied, genera *Faba*, *Pisum*, *Vicia*, and *Ervum*, cannot be upheld as distinct; but

although it is a very common practice in England to sow peas and tares mixed with beans, I have questioned many intelligent farmers on the subject, and not one had ever heard of any adulteration in the seed, in consequence of the mixed cultivation; which, according to Dr. Weigmann's statement, ought to be of constant occurrence in such cases. On the other hand, I have seen cultivated in Yorkshire a plant having the growth of a vigorous field pea *(Pisum,)* which produces seeds that no man would hesitate to call beans, and which when boiled have, I understand, more the flavor of beans than of peas; and the plant, though very fertile, has every appearance of being a mixed production between the two.

"Kolreuter raised mules *(Act. Ac. Pet.,* 1780) between *Lobelia siphylitica* and *L. cardinalis,* both ways. He found them fertile by the pollen of either parent, and their pollen fertilised the parents, but he obtained no seed from the mule by its own pollen. *Lobelia speciosa,* or more properly *L. Lowii (Bot. Reg.* 17, 1455,) was found in a border where *L. siphylitica fulgens* grew; it was a mule from *L. siphylitica,* which seeds freely. That mule, intermediate and purple-flowered, like those of Kolreuter, seeded abundantly with me standing in a border between the two parents; but the seedlings, with one or two exceptions, did not approximate to either, but reproduced the mule with some variability of color."—*(Amaryllidaceæ,* p. 352.)

SAVING OF SEED.

When seed is required to be saved, it is important to have the plants to bloom as early as possible, for seed is in general much finer when it can be ripened before the moisture, which sometimes occurs early in September, or the cold nights of October, check the process of filling and coming to maturity. Late ripening seed also, particularly of syngenesious plants, are much more apt to be destroyed by the small orange maggots of a two-winged fly, which does extensive damage in this way, though this is not discovered till the seed heads are gathered and found to be empty or nearly so; as any body may soon see, almost on any given year in the end of September or October, by examining the seed-heads of the common thistles by the way side. So common and so extensive is this destruction of syngenesious seed, that I have more than once been disappointed in obtaining a single seed of the musk thistle *(Carduus nutans,)* which I was desirous of rearing as a border flower, with the view of improving it if possible by cultiuation.

During the process of ripening seeds, the plants cannot well have too much warmth and sunshine, provided their roots be kept duly moist by artificial watering when this is required. Rain, however, is apt to prove injurious to most seeds by producing canker, or the germinating fungus termed mildew. All valuable seeds

ought therefore, if possible, to be sheltered during rain, but again when the rain is over to be exposed to sunlight.

For the same reasons, seeds should always, when possible, be gathered in a dry state; and be carefully dried by hanging up the plants in a very airy place, such as a shed.

Some sorts will keep with greatest advantage if left in the seed pods till the time of sowing, but in this case it must be ascertained that no moisture is present to cause mouldiness. Other sorts should be cleaned from the husks as soon as these are thoroughly dry, and be put away in boxes or papers as is found most convenient.

CULTURE OF THE CHINESE PRIMROSE.

THE Chinese Primrose *(Primula prœnitens*, or *P. Sinensis,)* introduced in 1820, is from its gay appearance in winter, well deserving of notice. The culture is by no means difficult, if care be taken to drain well, and not to over-water.

Seed-Sowing.—The seed, which is produced abundantly (and the variously colored sorts may be crossed in February or March,) should be sown in May, or as soon as it is ripe, in pans or pots filled with equal parts of light sandy soil and leaf mould. The soil should be raised up in the centre. The seeds should be covered to the depth of the eighth of an inch, with the same soil finely sifted or sprinkled from the hand, and then set in a cold frame.

Mr. W. King, of Wenvoe Castle near Cardiff, sows in March or early in April, in pans of light rich mould, which he places in a heat of sixty or sixty-five degrees. When the plants are large enough to bear removal he pots them off into well-drained sixties, and hardens them gradually to endure the open air.

After-Management.—Till the seeds germinate they must be carefully watered, or to prevent the soil from becoming too dry it may be covered at first with damp moss; for if the seeds lack moisture after they begin to sprout, they will be certain to perish.

When the plants appear let the moss be cleared away, but shade slightly for a day or two, till the young plants are hardened, for sudden exposure to the light might destroy them.

As soon as they have formed two or three rough leaves, they may be transplanted into sixty-sized pots filled with equal parts of light loam, sandy peat, and well-rotted dung. It is important to attend to this transplanting, for when they remain too long in the seed pot, they often die off.

Let them be re-potted as frequently as they require it, till they be removed for flowering into thirty-twos or twenty fours, filled with similar compost to that just directed. Shading during the summer will be important, and they should be taken into a greenhouse or warm room in October.

Cuttings.—Mr. Paxton directs to make cuttings of all the old plants, taking them off above the surface of the soil, and to cut off with a sharp knife all the bottom leaves, taking care not to disturb the upper ones. Then to fill a number of various sized pots with rich compost, composed of equal parts of loam, peat, and well-rotted dung. Previous to filling each pot, let it be well drained with broken potsherds—indispensable to the health of the plants. Let one cutting be planted in each pot, put a little white sand round it, and then sprinkle it slightly with water but so as not to loosen the cutting.

Let the pots be then placed in a close frame, plunged in a little bottom heat, and admitting no air until they begin to grow. As soon as they show flowers, they may be placed in a greenhonse, or in the windows of a sitting-room, where they will blow during the greater part of the winter. They do not answer turned out into the borders.

As soon as the old roots have done flowering, they may be made to supply a good stock of cuttings by placing them in bottom heat, though this when not at hand is by no means indispensable.

SOME HINTS UPON THE TREATMENT OF GREEN-HOUSE PLANTS DURING SUMMER.

We have oftentimes thought, when viewing many of the very fine collections of plants in the summer season, which now abound in the amateur garden throughout the country, that there was a great want of care and attention in the management of the plants during that season of the year, when placed out of the green-house in the open air; and it has often occurred to us, that a few hints upon the negligent mode in which many of the more delicate and beautiful plants are treated, might be the means of inviting attention to the subject, and prevent, perhaps, in some degree, that careless disposition of the plants which too many cultivators seem to think of little or no importance when out of the green-house or conservatory.

We shall now briefly note down some ideas which have occurred to us, and we hope that they may tend to induce cultivators, especially those who possess choice collections, to give more attention to their green-house plants during summer, not only for the purpose of keeping them in a healthier and more vigorous condition, but of rendering them interesting objects throughout the whole year—the splendor of their winter habitation and pleasing ornaments to the garden all summer.

Who, that is a lover of plants, has not often admired the neatness and beauty of a well arranged green-house—the vigor and elegance of the plants, and the brilliancy of the blossoms?—from November to May, how much gratification and delight they afford; but from

June to November, how different is their appearance! When the season arrives for removing the plants from the house, a general clearing is made at once of every object there; the camellias, azaleas and heaths, are placed in one situation, the roses and geraniums in another, the cacti tribe huddled together in some out-of-the-way place, and the different kinds of bulbs thrown together in another; some scattered hither and thither, under the shade and drip of trees, and others exposed to the full blaze of a burning summer's sun, and, often-times without any reference to the shade, light, heat or moisture, which each particular tribe requires. Some of the tallest species, blown about by the wind, and sweeping the ground with their branches, by the continual upsetting and rolling about of the pots—some of the broken pots, others overrun with moss and weeds, the earth ploughed up by the continued action of the worms —the whole oftentimes presenting such a confusion and wildness as to lead one, not familiar with plants, to imagine that they possessed no value sufficient to render them objects of any care or attention.

This carelessness and neglect of green-house plants, during the summer season, may be attributed, in a great degree, to the simple cause of the uninteresting appearance of the plants, of many species and varieties, when not in blossom; having completed their season of flowering, and, some of them, perfected their growth for another year, they are looked upon as objects affording no gratification sufficient to bestow other than the necessary labor upon them, of keeping them alive by occasional supplies of water, (oftentimes without much regard to regularity,) until placed in their winter domicil, to again reward their cultivator, by a brilliant supply of their varied and pleasing blossoms, for his assiduity in nursing and fostering their growth. Year after year the collection is shorn of some of its finest ornaments, and unless a stock is kept up by continual propagation or by purchases from the nurseryman, it is soon reduced, and what remain are but sickly objects, which, as they become less vigorous, receive the less care.

We are induced to believe that in amateur collections, where there is not a professional man, many fine plants are lost by inatten tion during summer: though much anxiety is often felt for the fate of the plants during winter, they suffer far less, in general, than they do in summer, provided ordinary care is then given them. The burning summer's sun, the hot parching winds, and the frequent heavy rains, in our climate, are more fatal to the health of plants, than the cool temperature of any indifferently regulated green-house, during winter.

Where there is a choice of collection of plants, the first consideration should be, next to a convenient, large and well ventilated green-house, to prepare a suitable place for the plants during the summer season. The situation should be open and exposed to the

free circulation of air, and it should not be under the drip and shade of large trees, as is too often the case. It should be a situation prepared on purpose for the plants; and if judiciously chosen and the plants all properly and neatly arranged, it may be made as pleasing and interesting a portion of the garden as could be desired.

The plants should be sheltered from the northerly winds, either by a fence or trees at a short distance from them; and if the place could be selected where it was in some degree protected from the wind at each point, it would be all the better. The first operation is to prepare a foundation for the pots, in such a manner as to keep the worms, as much as possible, from entering them. For this purpose various substances and various methods have been recommended; most writers advise a layer of coal cinders to the depth of four or five inches, but these are not easily to be obtained in this country, where very little sea coal is used, except in the vicinity of cities, and recourse must be had to other means for effecting the same object. A correspondent of Loudon's *Gardener's Magazine*, recommends excavating the earth to the depth of six inches, and filling the space with sand, on which the plants may be placed. We have found a layer of the fine siftings of anthracite coal, about four inches in depth, and well rolled down, to answer a good purpose.—On such a foundation we have placed our plants for four or five years, and by adding a little fresh siftings on the surface every year, have been but slightly troubled with the worms. When neither of these substances can be conveniently had, planks, placed upon bricks, answer very well.

The best form of ground for arranging and shading the plants is a parallelogram; a frame may then be erected, and by having an awning upon the same, the plants may at all times be protected equally from the scorching sun and the heavy rains; but in whatever form the bed or beds are laid out, the plants should be so arranged as to admit of their being easily watered; they may be placed in circles, with the tallest in the centre, or in rows in the same manner, always grouping those together which require about equal supplies of water at the root and over the foliage. Camellias, rhododendrons, azaleas, and such harn wooded species, may be placed together; heaths, epacrises, diosmas, pimeleas, and New Holland plants generally, by themselves; cactuse, stapelias, and other succulent plants requiring but little water together, miscellaneous plants as they approach one another, in similar treatment; geraniums and most soft wooded plants requiring considerable sun, may be placed in most any situation where there is convenient room; when there is sufficient space in the rear of the green-house or conservatory, with a wall, fence, or trees to break the north wind, it will be fouud the best place for arranging the plants; where the collection consists of but few plants, and those principally camel-

lias, azaleas, &c., it may not be deemed advisable to be to any great expense to prepare a place for the plants: in such cases they may stand on a prepared border, adjoining the back of the green-house, and shaded, if the sun strikes them too powerfully, by a slight awning running down from the back of the back wall to the distance required. This will answer every purpose.

Having given these general details, we shall offer some remarks on the treatment of the plants, under the following heads:—Removal of the plants from the Green-house—Shade—Water—and Removal of the Green-house in the fall.

REMOVAL OF THE PLANTS FROM THE GREEN-HOUSE.

By the first of June is as early as plants can be taken from the green-house with safety; some kinds will not bear removal at that period, but a large portion of them may be taken out, so that the remainder will have a better chance to receive the due benefit of a free circulation of the air around them; occasionally some plants do better to remain until July, but their earlier or later removal oftentimes depends upon the weather, we have known it so cold during the first fortnight in June, as to render it highly prejudicial to remove the plants at that time; but, as a general rule, that may be taken as the period to commence removing them to the open air. If the collection embraces a fine assortment of camellias, these will be the first thing to look after.

If their growth commenced very early, and they have fully completed it, began to harden their young wood, (which may be easily known by its turning brown,) and just show, the flower buds, they may be removed; or those only which are thus advanced may be taken out, and the remainder suffered to remain a little longer. It should be a general rule, never to take camelias out of the green-house until they show their flower buds, as they oftentimes do not perfect any if removed too early: the sudden transition from the house to the open air checking the rapid flow of sap to the buds, which already begun to form. It is best, therefore, to take out only those which have tolerably prominent flower buds, and leave the remainder to be removed from time to time, as they are ready.

Rhodendrons, azaleas, daphnes, &c. may be removed at any period after June 1st. They should be placed at once where they can be shaded from the sun, especially if the new growth is not completed. Roses may be removed immediately and plunged into the border, or retained in pots, and placed where they can receive the sun part of the day. Geraniums, if yet in flower, may remain in the house, where they can be conveniently shaded, and where they will be a great ornament until July; as soon as their blooming is over, remove them at once to a half shady place, where

they are to be pruned in and remain until the middle of August, when they may be fully exposed to the sun. Ericas and New Holland plants may be taken out with the others. Pots of oxalises, ixias, &c., which have done flowering, may be all removed to where they can be protected from heavy rains. Cactuses may also be removed, as the open air seems to harden their shoots, and cause them to bloom more abundantly. With the exception of camelias, as above noticed, nearly every plant may be taken from the green-house.

Shade.—The incidental remarks which have been made above, relating to shade, leave us less to say on this head. Camelias should not be allowed to have the sun more than four or five hours in the morning—say until ten o'clock; rhododendrons, azaleas, daphnes, and most evergreens, may be allowed the same; heaths may be allowed somewhat more, though it is not best to have too much; small plants of heaths, as well as azaleas, do well in frames facing the north, cactuses may be allowed the sun, both morning and afternoon, only shading them two or three hours at noon; and roses and geraniums may be exposed to it half of the day. Every plant cannot be particularized, but those which seem to possess similar habits to these now named should have the same treatment. If the plants have been arranged as has been advised, the camelias and other evergreens may be placed on the north, and the others on the south; and the shade, by being fitted with rollers, can be put up or down at pleasure, and at different hours of the day.

Water.—To give due supplies of water, and at proper times, requires some judgment; in dry and parching weather, which often occurs, the plants will need an abundant supply, while in cooler and more moist weather, a small quantity will be sufficient: as a general rule, water should be given every night in fine weather, and at other times once in two days. Plants perspire rapidly, and as they generally show outward symptoms of aridity very quickly, those which need water may be readily known. Camelias should be syringed three or four times a week, throwing the water with force all over the foliage and branches, to dislodge all dust and insects. Rhododendrons, and other hard wooded plants, will also require frequent syringing. Roses, geraniums, and other soft wooded plants, must be well supplied at the roots, and occasionally a little thrown over the leaves. Cactuses should be watered well till they have completed their growth, which will be the latter part of August. Heaths must be carefully looked after, judiciously watered, and frequently syringed; when the pots are plunged, they will require less water. In September, and just before the plants are housed, the nights being longer and cooler, with heavy dews, gradually lessen the supplies of water. Some plants will need repotting in the autumn; those that do, should be set aside and

attended to in good season, in order that the roots may get established before they are taken into the house.

Insects.—The plants are often troubled with insects during summer; the red spider, the aphides, the brown scale, the mealy scale, and some others infest the plants, and sometimes, if not carefully looked after, increase and spread so rapidly, as to injure the plants very seriously; the red spider is particularly troublesome, and in hot, dry summers very numerous. Liberal supplies of water, by the means of a syringe, is the best preventive, and, if regularly given, will them at bay; the aphides cannot easily be destroyed, except by fumigation with tobacco. The brown scale is a dirty and most disagreeable insect; they are not so injurious as the others, but they keep the plants in such a slovenly state, that it should be the first object to get rid of them. Camelias, oranges, oleanders, and other hard wooded plants, are the most infested by them. The only sure method of destroying them is to scrape them off carefully with some soft pointed instrument, as the tooth of a comb, or a piece of wood, and wash the plants with soap suds. Camelias sometimes lose their flower buds and leaves, if the scale is allowed to increase and cover the shoots. These are the principal enemies of the gardener or amateur, and are readily destroyed if attempted in due season.

REMOVING THE PLANTS INTO THE GREEN-HOUSE.

As early as the first of Oct. [Nov.,] and occasionally before that period, removing the plants to the house must be commenced. Geraniums, being the most tender, will require to be taken care of first; other tender plants should be also got in; cactuses, and succulents of all sorts, must not be neglected. Rhododendrons, camellias, &c. will bear slight frosts without injury, and fears need not be entertained of any damage, unless the thermometer fall below 30 degrees. We have even had them exposed at 26 degrees, and could not discover that they suffered any; repeated chills, however, if too much prolonged, might be injurious. Every plan should be examined before taken into the house; all the pots should be cleaned, the surface of the soil top-dressed, (unless lately repotted,) and the plants trimmed and neatly tied up where they require it. As much should be accomplished as possible, before the plants are taken into the green-house; washing, cleaning, top-dressing, &c., if neglected till that period, will cause much trouble and delay in the arrangement of the plants. The camellias will require to have their leaves well washed, if they have stood in a dusty situation, as nothing detracts so much from the beauty of the flowers, as the foliage covered with dust; the pure and delicate tints of the flowers are heightened, in a great degree, by the deep green glossy surface of the foliage.

In the arrangement of the plants upon the stages or on the back border, if there is no stage, much will depend upon the taste of the cultivator. The large and tall evergreen shrubs should occupy the back stage or border, placing the dwarfest nearest the walk. The front stage may be devoted to geraniums, roses, &c. and the front shelves to winter bulbs, such as oxalises, &c. The Cacti may occupy the highest and most out-of-the-way station to be found; the nearer the glass the better; in such situations they will perfect their flower buds, and if very *sparingly* watered, will flower abundantly. All the plants should be arranged, and the house in order, by the middle of November.

When we commenced these remarks, we did not intend to make them so general; but, as we have proceeded, some things have struck us which we have deemed worthy of record. We might peculiarize many plants, which require quite peculiar management, but to do so would occupy more space than we could well spare. We shall however, at a future time, again revert to the subject, and offered some observations on soils, potting, &c.—*Boston Magazine of Horticulture.*

CULTURE OF AZALEAS.

All tender Azaleas require one general mode of treatment as follows:—

Pot them as soon as they have done flowering, which will be about the end of May, [*March,*] except those intended to be left for seed, which must remain until they have ripened their seed.

Use a mixture of equal parts of sandy loam and peat with a small portion of leaf mould, in preference to all peat; and be careful in potting to give a good drainage of broken potsherds; for although they delight in moisture, stagnant water usually proves injurious to them.

About the middle of June, [*April,*] place them in a somewhat sheltered and shady situation, out of doors.

Allow them to stand in this situation till September, [*November,*] then remove them into a pit or green-house, in any airy situation, until they are wanted for flowering.

It is a great assistance to them, when about expanding their flowers, to remove them into an increased temperature; this should be from sixty to sixty-five degrees Farenheit, and the plants may be introduced about the middle or end of September, [*October,*] which will come into flower towards the end of October, [*November,*] and will continue blooming till December; [*January,*] others brought in the middle of October [*November,*] will continue flowering until January; [*February,*] those brought in the end of November will continue flowering till February, when those in the pit or green-house will commence flowering, and continue till May, [*April.*]

When they are in flower, a good supply of water is requisite, to enable the plants to support them; any deficiency in this respect will cause the flowers speedily to fall.

When they have done flowering, assist them by every means to make young wood, a good supply of which must be secured before they are removed from the increased heat. For this purpose, syringe them about once or twice a week, and after they have grown considerably, remove them to the green-house, previous to their being turned out of doors, and treat them like other green-house plants, merely giving them a good supply of air and water.

When the young shoots are from four to six inches long, they are best calculated for cuttings. Take them off after the plants are removed to the green-house; separate each cutting close to the old wood from whence they start, trim off no leaves but those which grow on that part intended to be inserted in the pot. They must be planted in either sand or light soil, the former is the best; plunge the pots in a little heat, and place a hand-glass over them, and in the course of a fortnight or three weeks they will strike root.

When they have struck root, transplant with balls into single pots, filled with the compost recommended for the old plants, and again plunge them into a little heat until they have begun to grow, after which they may be removed to the green-house, and be treated like other green-house plants.

Many of the green-house species and varieties will bear a good degree of cold, and will thrive very well if planted under the wall of a stove, green-house, or other warm situation; but in winter they must be sheltered by mats from the effects of frost. The Indica Phoenicea flowers most beautifully, when planted out in the border of a conservatory; it will there grow from four to six feet high, with a good supply of water, and slight shade.

Hardy species and varieties require little care; they may either be grown on a bed or otherwise to suit the fancy of the cultivator. Always select for them a situation somewhat shady and rather damp, but by no means one where water stagnates, unless a good drainage be laid underneath.

In all dry summers a good supply of water is advantageous, though not indispensable; but plants so treated always thrive more than under other circumstances.

Some of the species produce abundance of seed, which may be sown in pans or pots as soon as gathered; place them in a shady situation, and keep them rather moist until they vegetate.

As soon as they are of a sufficient size, transplant them into other pots, and place them under a glass, and let them be slightly shaded until they have again started. Then expose them by degrees, until they are hardy enough to be planted out.

The hardy species and varieties are also readily propagated by layers and cuttings. The branches in layering merely require peg-

ging down without any tongue, and a regular supply of moisture administered. The cuttings may be taken off precisely in the same manner as recommended for the green-house species and varieties; but, instead of planting in pots, they may be planted under a hand-glass, on a shady border.

The Azalea is scarcely separable from Rhododendron, with regard to the number of stamens, some seedlings raised from Azaleas having only five stamens, have themselves possessed ten, and even more, whilst seedlings raised from Rhodedendrons have had less than ten stamens, and in other respects have very nearly resembled Azaleas.

The generic name is given from the natural habitation of the plants, many of the North American species growing in dry steep declivities, or on dry plains, where for a long time they can scarcely receive any moisture.—*London Horticultural Register.*

ON THE PROPAGATION OF PLANTS IN WATER.

BY THE AUTHOR OF THE DOMESTIC GARDENERS' MANUAL, C. M. H. S.

This little article is perhaps of no great utility, but it may serve to amuse, if not to instruct some, who are curious in horticultural experiments. I have before given, at some length, a detail of my early practice, of striking Melon and Cucumber cuttings, in a bottle of water, plunged in a bed of leaves or tan, the temperature of which may range from 75 to 90 degrees. I pursue this practice steadily, cutting the terminating sprouts of good, vigorous plants across the third or fourth joint, from their points; but this precaution is not essential with the cucumis tribe; for I have noticed that, roots may be emitted *between joints;* and even (as is sometimes the case) when the interval between the lowest end of the cutting, and the first joint above it decays, and as it were, dissolves in the water, roots will emerge from the sound parts above those that decay; hence, every facility is afforded to a cultivator. I find that frequently in three days, some radical processes are sent forth, quite sufficient to secure the growth of the plant in the soil, without a moments loss of time, and this I account for, by the perfect *safety of the removal* from the fluid medium, without the disruption, or slightest injury of any fibre or spongelet. It may, however, be as well to cover the young plant for a day or two with a hand glass, to guard against evaporation, till it has fully established its protruding roots in the terrene medium. The foregoing observations may be considered as an appendix to the facts already recorded: it remains to notice others which have induced me to offer this article to the attention of the readers of the *Register.*

The mode of propagation by cuttings is adopted extensively by every cultivator; but I am persuaded that a good deal of time may, in many instances, be economised by having recourse to water. I

would by no means abandon the old mode : the only point which I believe is not sufficiently attended to, is one that seems of essential moment. Wherever a large stock of plants of one species is not contemplated, a great deal of disappointment may be saved by placing *single* cuttings in very small pots; or if three be placed in the same spot, I would urge the gardener to thrust each into a little hole in close contact with the side of the pot.

When the three plants are rooted, and growing, a knife passed cautiously through the ball will secure a sufficiency of earth to protect the young plant from a very serious check, and if the pots of cuttings be placed in a shallow propagation frame, having a sliding sash light a few inches only above the tips of the cuttings, there will generally speaking, be little need of employing bell-glasses. But a few phials with necks at least half an inch clear in the bore, and nearly filled with rain water, will not only furnish a resource for the operator, but afford him an opportunity of watching, day by day, the mode in which nature effects her radical developements. I am persuaded by the evidence of my daily experiments, and the analogy thereby traceable—that, most succulent and semi-succulent plants will, if favorably treated, protrude roots into water.

Nerium Splendens :—indeed, Oleanders in general will strike freely.

Balsamina—the balsam will strike almost directly, and procure a flowering plant of three inches in height.

Gesneria will, I believe, root to *a certainty ;* though not rapidly. I have by me a single leaf of *Gloxinea Speciosa,* which I took off *with its bud,* close at the junction with the stem. I plunged the phial in a bed, and in a few days, the base of the footstalk began to swell ; the little bud upon it became greener, increased, and threw out two minute leaves. A fortnight has elapsed, and, to-day I observe a round, whitish knob about one-sixth of an inch across, at the base of the stalk, and one single fibre emerging from that above it,—but still resting on the leaf, a complete plant in miniature is traceable.

Now, all this is delightful and instructive. I drop a few hints only at this time, because I cannot command leisure to proceed at length ; and moreover, these hints may prove a stimulus to the wise and industrious horticulturist. Reader—I beseech you to follow the lead—pursue the inquiry, and communicate your discoveries to your brethren. None will be more grateful than he who *believes* he now communicates something of novelty ; but who, if he have been, (though unknowingly) forestalled, will be one of the first to acknowledge his tardiness.

P. S.—I could *name* several experiments, but these may present matter for a future paper ; however, I think that, Dahlias may be raised in water, and that, in great probability pine apple suckers and crowns would emit roots, but require a good heat and cautious immersion.—*London Horticultural Register.*

CULTURE OF BEGONIAS.

They are plants of easy culture and are very generally seen in the windows of private dwellings, where they succeed very well if properly attended to and have sufficient water, of which they require a free supply. But the best method for their cultivation is to pot them in a mixture of peat and sand, or (as preferred by some,) in decayed vegetable matter, as old tan, and keep them in a humid atmosphere. Under such treatment they become delightful objects and cannot but excite universal admiration. They are readily increased by cuttings of the young shoots in the spring as well as by seeds. The readiest method of increase, however, is by clusters of small germs, which are formed abundantly upon the stems in the axillæ of the leaves at almost every joint. These may be collected when the stems begin to decay, and kept dry until spring, when if sown with only about the sixteenth part of an inch of light soil put over them, they will soon vegetate. Plants raised by this means frequently flower the same season. During the winter, when the plants are in a dormant state, the soil in the pots should be kept almost without water.—*Flor. Cabinet, p.* 28, *vol.* 1.

TO PRESERVE GREEN-HOUSE PLANTS THROUGH WINTER.

About the time at which green-house plants are taken from the borders, go over them, and take off what cuttings they can spare, some of which may be cut to pieces, and made the most of; then take pots about eight or nine inches diameter, put twenty or thirty cuttings in each, and plunge the pots up to the rim in a hot bed, which has but a slight heat. Cover the pots of cuttings with hand-glasses or a small frame, and in a short time the cuttings will have emitted roots. They may remain there as long as the weather is mild. When the frost sets in, remove them to a room, or any other place where they may be protected from the cold. A small window with a shelf in the centre, will contain two hundred plants. If the same windows were employed for holding full-sized plants, two common-sized pelargoniums would fill it. In about the latter end of March, plant each rooted cutting in a small pot, and put them in any sheltered situation, until the season for transplanting in the open air.—*Magazine of Domestic Economy.*

GARDENER'S CALENDAR FOR APRIL.

VEGETABLE GARDEN.

Sow Cauliflowers, Brocoli, Cabbages, Carrots, Beets, Salsafy, Parsnips, Turnips, Radishes, Peppers, Tomatoes, Okra, Kidney and Lima Beans, Squashes, Pumpkins, Cucumbers, Melons, Lettuces, Onions, Leeks, and Celery.

Transplant Cauliflowers, Cabbages, Tomatoes, Peppers, Guinea Squashes. Prick out Celery.

Remarks.—For the culture of Cauliflowers and Carrots, we refer to the articles in the present number. Carrots, Beets, Salsafy and Parsnips, if not sown before, ought no longer to be delayed. Turnips should be sown only in small quantities, and European Seed alone be used, Radishes should also be sown every three weeks. Peppers, Tomatoes and Okra should have been sown last month; if not done then, let it be done immediately. Kidney Beans may be sown now to succeed those sown last month. Lettuces should be sown where they are to remain, for if transplanted out they will run to seed. Cucumbers, Melons and Squashes should only be sown now, when they have been neglected; they do not succeed as well as when sown in March.

THE FLOWER GARDEN.

The Flower Garden will now claim considerable attention, and will be rewarding for the pains taken with it. *Tender and Hardy* Annuals may still be sown, and those raised last month may be transplanted in this. *Biennials* should be sown to produce their flowers the next season. Towards the last of the month *Rose Cuttings* may be put in, and when it is desired to have *Roses* flower late, they should now be pruned, instead of during the Winter. *Dahlia* plants will be advancing rapidly in their growth, they should be neatly staked and tied up to prevent the winds from breaking them down. All other plants growing tall should be tied to sticks, to prevent their being blown about. Geraniums will be coming into bloom—as soon as it is passed they may be propagated by cuttings. Many of the Green-House plants, such as Fuchsias, Azaleas, Cactuses, &c., may now be successfully propagated by cuttings.

HORTICULTURAL CALENDAR FOR MAY.

VEGETABLE DEPARTMENT.

Sow Cabbages, Cauliflowers, Brocoli, Savoys, Carrots, Beets, Turnips, Cellery, Radishes, Snap Beans. Transplant Cabbages, Cauliflowers and Brocoli. Prick out Celery. All seeds sown this month will require shading. The Carrots, Beets, Parsnips and Turnips should be sown only in small quantities, for they are not likely to succeed except under very favorable auspices. Keep the ground clear of weeds and frequently stirred.

THE FLOWER DEPARTMENT.

The directions given for April are equally applicable to this month, let them be attended to.
